Preparatory meeting to the Fifth High-level Meeting on Transport, Health and Environment
25 January 2021

Recommendations for Green and Healthy Sustainable Transport – “Building Forward Better”

Draft of 20 January 2021
Acknowledgements

The Recommendations for Green and Healthy Sustainable Transport – “Building Forward Better” have been developed thanks to the hard work of the Task Force members between April 2020 and February 2021. All experts from around the world dedicated significant amount of their time to discussing, analysing and identifying the challenges and outcomes of the COVID-19 pandemic on the transport sector. Their deliberations led to the formulation of the recommendations proposed within this document.

The Transport, Health and Environment Steering Committee would like to thank the following Task Force members for their commitment to the completion of this document:

INSERT NAMES
Chapter 1: Introduction

1.1 Background

The Pan-European region has been at the forefront in the development of sustainable mobility solutions focusing on health, environment and prosperity. The Transport, Health and Environment Pan-European Programme (THE PEP), firstly brings the countries of the region together, secondly unites three core sectors of the economy – transport, health and environment - and thirdly provides countries with the opportunity to share best practice and develop new policies. It therefore provides the platform for accelerating transformation in the transport sector and makes this transformation irreversible. The recommendations developed by the Task Force will allow member States to lock in sustainable transport solutions for the future given the changes to the sector brought on by the COVID-19 pandemic.

At the meeting of Bureau of the Steering Committee of THE PEP in April 2020, member States discussed the COVID-19 situation and the impact that it was having on transport, environment and health in their countries and the need to take action. Participants agreed to establish a THE PEP Task Force on: “The Development of Green and Healthy Sustainable Transport Recommendations” to facilitate the transition to a new normal with sustainable and healthy transport solutions at the heart of decision making and “building forward better”.

The objective of the Task Force was to make a synthesis of the “main lessons” learned from the Covid-19 crisis and to propose a set of recommendations in order to support countries in making the change to green and healthy sustainable transport: A transition in line with the goals of THE PEP¹, the Vienna Declaration of the Fifth High-Level Meeting of the Ministers of Transport, Health and Environment, the Sustainable Development Agenda and the Paris Climate Agreement² to name the key ones.

The Task Force was composed of over 50 experts from national Ministries, International Organizations, City Authorities, Inter-governmental and non-governmental organizations, Academia and industry experts. The Task Force was chaired by the Chair of THE PEP Steering Committee, Mr. Robert Thaler – Austria.

The Task Force met virtually over 8 monthly meetings and, based on an agreed term of reference:

- exchanged experiences and best practice from national actions to counter the effects of COVID-19.
- established a framework under which the Task Force would function.
- developed common views on what the key themes for discussion in the recommendations should be.
- agreed a set of recommendations for the final document.

During this period, smaller, parallel drafting groups were set up to develop text for the key themes identified by the Task Force as being fundamental to the development of the Recommendations.

The first draft of the Recommendations was discussed at the Steering Committee meeting of THE PEP in November 2020 and, following further consultations, was finalized in January 2021. The recommendations identified in Chapter 3 below were then included in the Vienna Declaration to be signed at the Fifth High-Level Meeting of the Ministers of THE PEP in May 2021.

¹ THE PEP From Paris 2014 to Vienna 2019: https://thepep.unece.org/node/87
² https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement
The remainder of this first chapter provides an overview of the current situation of the transport sector looking at the pre COVID-19 situation as well as the transport effects during the first lockdowns and the plans for the reopening phases. Chapter 2 opens with a call for action for the future and describes the main themes that have been identified as key areas for recommendations. Chapter 3 sets out the conclusions and recommendations for member States. Chapter 4 sets out the next steps for this work following the adoption of the Recommendations.

1.2 Current situation of the transport sector and outlook

The transport sector pre-2020

The car remains the main mode of transport across the region. According to Eurostat, in relation to EU-28 member States, the market share of passenger road vehicle transport in relation to all passenger transport has increased from 82.5 per cent in 2000 to 83.3 per cent in 2018. In comparison, railways had a market share of 8.0 per cent in 2018, compared to 7.1 per cent in 2000 and motor coaches, trolley-buses and buses a share of 8.7 per cent down from 10.4 per cent in 2000. The share of passenger road vehicles is usually lower when looking at cities only, but still remains the highest mode in terms of share in most cases.

The same is also true across the wider UNECE region where the car remains the main mode of vehicle transport. Using UNECE data, passenger road vehicle transport market share decreased from 93 per cent in 2000 to 89 per cent in 2018. In comparison, railways increased from 1.6 per cent in 2000 to 2.3 per cent in 2018, and motor coaches, trolley-buses and buses from 5 per cent to 8 per cent.

According to a Eurobarometer study from 2014, 8 per cent of respondents said that cycling was their most often used mode of transport on a typical day. Countries also report their own data, however, methodologies to collect data can vary between countries, making data less comparable. Recent national data shows that there can be significant differences between individual countries. For example, at the higher end, in 2016 the modal share of cycling was 27 per cent in the Netherlands and in 2017 Germany reported a share of 11 per cent. At the lower end, in Portugal in 2016 the modal share of cycling was only 1 per cent, in Slovakia in 2017, 2 per cent, the same as in the United Kingdom in 2018. Although these numbers appear low, city-level data shows that many cities have seen large growth in cycling in recent years.

The mode distribution of the freight sector is different with rail having a significantly higher share compared to passenger transport in many countries across the region, but as a whole, the road sector remains dominant. This is even more pronounced in urban environments and other settlements where rail and other non-road goods deliveries are extremely limited.

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3 Data used here includes passenger cars, motorcycles, busses, trolleybuses and motor coaches, and rail
4 A selection of 13 countries based on availability.
5 Or latest available year.
8 https://www.biwi.de/SharedDocs/DE/Anlage/G/mid-analysen-rad-fussverkehr-bilder.pdf?__blob=publicationFile
10 https://www.cyclerurban.eu/countries/slovakia/#:~:text=In%20Slovakia%2C%20cycling%20has%20a%2C%20cycling%20share%20by%202020.
Impacts of transport on environment and health

Transport, and in particular road transport, has a negative effect on the environment and health. This is exemplified by air and noise pollution, injuries, illnesses and deaths caused by poor road safety, congestion and poor urban and spatial planning, which, in turn, is exasperated by physical inactivity that results from using transport modes on a daily basis.

In addition, in June 2019 the European Commission has revised their calculations of the societal and environmental impacts of transport\(^\text{12}\). The total external environmental costs of transport (linked to greenhouse gas emissions, local air pollution, noise, energy production, habitat damage), as well as the costs of congestion and crashes sum up in the EU to almost €1 trillion annually, with urban share estimated to be at least 50%. Road transport causes more than 80% of such external costs (approximately €620 billion caused by passengers and €200 billion by freight), including road crash costs (some €280 billion), congestion costs (some €270 billion) and environmental costs (some €270 billion).

This is a very substantial increase in relation to calculations included in the 2013 Impact Assessment, where total external costs of transport were estimated at €420 billion annually, with urban share estimated at €230 billion.

To ensure good quality of life in cities and to make them more accessible, clean and competitive, a modal shift towards sustainable modes of transport and public transport is necessary. Increasing car traffic in cities and metropolitan areas leads to rising external costs relating to air pollution and lost time, which consequently also negatively affects work-life balance.

Air pollution is a major health threat in Europe causing premature deaths and disease and transport is a major cause of this. Although, air pollution from transport has been steadily declining in the European Union in the past decades (see figure 1), it still remains a concern. According to data from the European Environment Agency\(^\text{13}\) (EEA), inland transport (passenger and freight) is one of the largest contributors to greenhouse gas emissions, responsible for about 22 per cent of all emissions in the EU, in 2017, with the road transport sector covering more than two-thirds of that. Coupled with this, the road sector remains one of the biggest sources of polluting emissions including NOx (15 per cent) and 8 per cent for PM2.5 emissions (the fourth largest polluter), but also of non-exhaust related pollutants from brake, tyre and road wear.

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\(^{12}\) https://ec.europa.eu/transport/themes/sustainable/internalisation-transport-external-costs_en
\(^{13}\) Healthy environment, healthy lives: how the environment influences health and well-being in Europe; as; Luxembourg 2020
Figure 1: Pollutant emissions from transport (composite index of nitrogen oxides (NOx), non-methane volatile organic compounds (NMVOCs) and particulate matter (PM10)) in EU-28, 1990-2017, (index 2000=100)

Source: Eurostat\textsuperscript{14}

The EEA also estimates that, annually, 400,000 premature deaths in Europe are attributable to air pollution\textsuperscript{15}. During the period 2016-2018, a significant proportion of the EU urban population was exposed to key air pollutants above EU limit or target values and above the WHO health-based guidance values as set out in figure 2 below.

\textsuperscript{14} https://ec.europa.eu/eurostat/databrowser/view/t2020_rk300/default/table?lang=en
Figure 2: Percentage of the EU urban population exposed to air pollution concentrations above EU and WHO reference values during the period 2016-2018

Source: EEA.

Note: Particulate matter with a diameter of 2.5 µm or less (PM2.5), particulate matter with a diameter of 10 µm or less (PM10), ozone (O3), nitrogen dioxide (NO2), benzo[a]pyrene (BaP) and sulphur dioxide (SO2)

Maintaining a high level of road safety is one of the main challenges within the region. Significant progress has been made in reducing the number of deaths and injuries as set out in Figure 3 below, however the numbers still remain too high. While the number of road deaths has been steadily decreasing on some types of roads (motorways) and for some types of road users (car drivers and passengers), the reductions have been much less marked for vulnerable road users. Moreover, in the United States, mortality of pedestrians increased by 50% in the last decade.

Moreover, there is the problem of increased congestion. Rankings of cities made by some international companies for 2019, based on mobile phone and GPS data, shows that congestion levels in Europe decreased only in 30 cities out of 239 cities listed compared to 2018. According to INRIX, in the ten most congested cities in Europe, average traffic speed varied from 12.9 km/h in Palermo to 24 km/h in Moscow. A similar ranking compiled by TomTom for 2019 shows that congestion levels in Europe decreased only in 30 cities out of 239 cities listed compared to 2018.

16 https://etsc.eu/safer-‐roads-‐safer-‐cities-‐how-‐to-‐improve-‐urban-‐road-‐safety-‐in-‐the-‐eu-‐pin-‐flash-‐37/
17 https://etsc.eu/safer-‐roads-‐safer-‐cities-‐how-‐to-‐improve-‐urban-‐road-‐safety-‐in-‐the-‐eu-‐pin-‐flash-‐37/
As a result of the increased use of motorised vehicles on a regular basis across the region, the urban population tends to do less physical activity. According to the WHO,\textsuperscript{20} the lack of physical activity is one of the leading risk factors for noncommunicable diseases mortality. People who are insufficiently active have a 20 per cent to 30 per cent increased risk of death compared to people who are sufficiently active.

Globally, 28 per cent of adults aged 18 and over were not active enough in 2016 (men 23 per cent and women 32 per cent). This means they do not meet the global recommendations of at least 150 minutes of moderate-intensity, or 75 minutes vigorous-intensity physical activity per week. In high-income countries, 26 per cent of men and 35 per cent of women were insufficiently physically active, as compared to 12 per cent of men and 24 per cent of women in low-income countries. Low or decreasing physical activity levels often correspond with a high or rising gross national product.\textsuperscript{21}

The information provided in this section shows that, at the start of 2020, the transport sector still had a long way to go before it can be identified as being green and healthy. THE PEP has been working on a number of initiatives aimed at improving this sustainability through the implementation of actions necessary to achieve its five priority goals. This has come primarily through the main activities of the Steering Committee and through a number of partnerships including on cycling, the Transdanube, green jobs, eco driving, the integration of environment and health issues in urban and transport planning as well as other related activities such as on managed mobility.

The impact of COVID-19 on transport

In the framework of the information provided above, in the spring of 2020 the first wave of the COVID-19 pandemic triggered a drastic response in countries around the world, with many cities


\textsuperscript{21} ibid.
going into complete lockdown. This imposed restrictions on people’s movement directly impacting traffic and the use of all forms of transport. GPS\textsuperscript{22} and traffic volume data\textsuperscript{23} show that in many normally congested cities, traffic levels dropped 70-80 per cent, in some cities even as much as over 95 per cent, during the first lockdown phase. For example, the decline in vehicle miles travelled (VMT) between 2 March and 22 June 2020 in Berlin, London, New York and Paris ranged from above 40 per cent to 20 per cent compared to pre-COVID levels (Figure 4). Of these, Paris was the hardest hit, but traffic there also recovered fast after restrictions were lifted in May. In the other cities, traffic levels remained higher throughout the period, but recovery was slower.

**Figure 4: Weekly vehicle miles travelled in Berlin, London, New York and Paris, as a percentage of pre-COVID-19 level (2 March to 22 June 2020)**

![Graph showing weekly vehicle miles travelled in Berlin, London, New York, and Paris, as a percentage of pre-COVID-19 level (2 March to 22 June 2020).]

Source: Traffic technology today\textsuperscript{24}

The freight transport sector was not immune to the effects of the first wave of COVID-19. According to Sixfold\textsuperscript{25}, a freight tracking company, truck traffic declined more than 50 per cent in Spain, 46 per cent in France and 37 per cent in Italy due to lockdowns. In April 2020, Transport Intelligence\textsuperscript{26} estimated that the road freight market in Europe could decline as much as 17 per cent in 2020 and even in the most optimistic scenario almost 5 per cent. The International Transport Forum (ITF)\textsuperscript{27} estimates the decline in freight transport to be even larger. In Europe, the reduction in inter-urban freight activity is projected to be about 40 per cent. However, the decline in urban freight activity in Europe is estimated to be much less than this, around 12-14 per cent, due to growth in online shopping and associated deliveries.

Similar impacts were reported on public transport. A mobility-as-a-service company, Moovit, tracks the usage of public transport in cities around the world. Their Public Transit Index shows a considerable fall in public transport use during the first wave of the COVID-19 pandemic, which has later fluctuated at a lower-than-normal level in many cities (see figure 5) also into 2021.

\textsuperscript{22} https://www.tomtom.com/blog/moving-world/covid-19-traffic/
\textsuperscript{23}https://360.here.com/covid-19-impact-traffic-congestion
Figure 5: Use of public transport in selected cities 15 January 2020 – 9 January 2021

Source: Moovit

Based on public transport data from London, the lockdown measures taken to respond to the first wave of the pandemic were reflected in bus and metro (Tube) usage, which fell to only about 15 and 5 per cent, respectively, from the end of March 2020 (see figure 6).

Figure 6: Use of bus and tube in London, 16 March-17 April 2020

Source: GOV.uk

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Similar evidence on the impact of lockdowns during the first wave of COVID-19 has been gathered in other cities. Research on the impact of COVID-19 on transport in Budapest shows that the demand for transport halved during the spring 2020 lockdown, with public transportation experiencing an 80 per cent decline in demand. There was also a significant shift in transport modes: the use of private cars grew from 43 per cent to 65 per cent compared to a 2018 baseline. Similarly, the share of public transport decreased from 43 per cent to 18 per cent.

During the pandemic many people have shied away from using public transport in fear of contracting the COVID disease. Some of these passengers have shifted to using a private car as a result of national authorities discouraging the use of public transport, but in many areas, there is evidence of growing enthusiasm for cycling. Several cities have responded positively to the increase in cycling by improving infrastructure, although in some cases solutions have been temporary. The European Cyclist Federation31 follows measures taken by authorities to promote or facilitate cycling in cities. To date, over 2000 km of infrastructural measures have been announced, of which about 1000 km have been implemented.

A study32 looking at different transport scenarios after the first COVID-19 lockdown in Italy estimates the social costs and benefits of different policy choices. Under the assumption that there are no policy interventions, in the most optimistic scenario after the lockdown the modal split between private cars and public transport is assumed to be 50-50. In this case, car-related social costs and congestion costs are estimated to be about 11 billion euros annually. In a worst-case scenario, where all public transport users switch to cars, similar costs would rise to 21 billion euros. These costs would arise from increased congestion, longer journey times, and increased risk of road crashes. The study compares the “no policy intervention” scenario to a situation where walking and cycling are encouraged. In this case, the assumption is that a portion of car journeys are instead done by foot or bicycle. In the best case scenario, where public transport would capture 33 per cent of users and of the remaining journeys 38 per cent would be made by car, 50 per cent by cycling or e-cycling and 12 per cent by foot, the study estimates net benefits of 20 billion euros per year. The benefits arise mainly from increased life expectancy, increased productivity and lower health care costs. The authors conclude that there is a strong basis for investing in and promoting walking and cycling in cities.

According to a weekly survey conducted in the United Kingdom since May 2020, after a slight recovery during the summer, the use of public transport declined again in the autumn of 2020 during the second wave of COVID-19 (Figure 7). Road use has, after an increase in the summer, stayed relatively stable with around 60 per cent of those surveyed saying that they have driven a car or a van in the last seven days. The decline in the use of public transport has not translated into a higher proportion of people walking or biking either. According to the survey, the proportion of cyclists has stayed between 5-10 per cent throughout the period. During the last quarter of 2020, the proportion of journeys made on foot has fluctuated around 40 per cent, down from a high of 50 per cent in September. Since mid-December 2020, the use of public transport has shown signs of falling again, following new lockdown measures introduced due to the worsening of the pandemic.

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31 https://ecf.com/dashboard
32 Decisio, “Social costs and benefits of post COVID-19 lockdown mobility scenarios in Italy”, August 2020
By actively discouraging public transport use many national and local authorities have sent negative signals on the long-term sustainability of the transport sector. There is the risk that the needed short-term measures introduced to limit the spread of the virus (there is currently no evidence to show that public transport is a vector for the virus\(^3\)) could have long-term impacts on the use of public transport and its perceived risk.

**Air pollution during COVID-19 restrictions**

Data shows that the stark declines in transport during lockdowns positively contributed to air quality, with NO\(_2\) levels dropping in many countries. Menut and others (2020)\(^3\) show that the lockdown measures in the United Kingdom, the Netherlands, Germany, Spain, France and Italy resulted in a reduction of NO\(_2\) concentrations between 20 to 50 per cent. Slightly smaller declines were visible for PM\(_{2.5}\) and there was almost no change in O\(_3\) levels. This decline was of course accompanied by a general decline in economic activity, the resulting temporary closure of factories and the consequential fall in mobility.

Indeed, in several European cities NO\(_2\) levels halved as a result of the first set of lockdowns (see table 1). However, data collected by CREA shows that pollution levels returned to previous levels after lockdown measures were lifted. Cities with the largest reductions in pollution levels also saw

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\(^3\) Source: Transport Focus\(^3\)


the larges rebounds, indicating that in these cities policies targeting transport related emissions could lead to the largest improvements in air quality, CREA concludes.

Table 1: Reduction in NO₂ levels in selected European cities due to COVID-19 lockdown measures

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<th>City</th>
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<td>Bucharest</td>
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<td>London</td>
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<td>Paris</td>
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<td>Copenhagen</td>
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<td>Lisbon</td>
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Source: CREA36, Moscow data from the Department of Natural Resources Use and the Environment Protection of Moscow Government

While a fall in air pollution is welcome, the fact that it occurred with this background cannot be seen as good news given the economic hardships that ensued and also as it is likely to only be temporary.

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Chapter 2: Actions for green and healthy sustainable transport

2.1 A new future for transport – a call for action

It is difficult to say how transport and mobility will evolve in future based on the information provided in the section above. What is clear is that transport and mobility as we know it today is not sustainable. Traffic is the cause of several environmental, economic, social and health challenges. Moreover, under the influence of global increase of population and welfare, the demand for transport will continue to grow. Public transport is fundamental to urban and inter-urban transport but in many areas it is not as competitive as the private car. Some parts of the region are starting to embrace active mobility solutions, but this is still in its infancy across many countries. This makes transforming the transport and mobility for the better around public transport and active mobility fundamental for a better future.

The COVID-19 pandemic has done untold damage to the economies of the region and has exasperated social inequality by increasing the socioeconomic divide and the gender gap in many countries with low-wage and part-time employees particularly affected. It has also created some short-term benefits in terms of reduced air and noise pollution and increased attention to promoting and providing for active mobility solutions. Furthermore, as traffic has fallen road deaths have fallen too (although in no way in a proportional manner). However, it is also true that people have been encouraged to get back into their cars for their commute as the common perception, often fuelled by advice from official sources, has been that public transport was less safe. This has yet to be proved but is creating the need for increased investment in public transport to match new requirements.

These positive and negative outcomes provide the international community with a springboard to take action to facilitate the achievements of the Sustainable Development Goals and the Paris Climate Agreement. We must move beyond business-as-usual and work together to build forward (not back) a cleaner, healthier and more prosperous system to meet mobility and freight transport needs, focusing on creating a more sustainable future for the sector, in which accessibility, efficiency, environment, safety and security are given an equal footing. This evolution needs to consider the direct impacts of the COVID-19 pandemic, but also demographic changes caused by an aging population and resilience towards future pandemics or similar national and international disasters.

This aim needs to be embraced by governments, city planners and citizens alike by integrating transport planning and spatial planning, noting the central role of public transport, understanding the key role that new technologies can have in sustainable mobility and incentivizing healthy and environmentally aware consumer choices. Implementing actions need to induce behavioural change by providing users with the capability, the opportunity and the motivation to change their transport habits. This approach to rethinking and reorganising the transport sector, offers economies a smart recovery and creates opportunities for green investments, reducing inequalities, whilst recognizing that the (zero emission) private car will still have a role, albeit significantly reduced, in the transport mix within member States.

A new approach offers opportunities and possibilities. It is important, therefore, to face the challenges together, by developing a common set of recommendations that can deal with the

37 https://sdgs.un.org/goals
38 https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement
current situation and stand the test of time to facilitate the transition to more sustainable transport and mobility.

The Task Force recognizes that this will not be easy to achieve as the themes and solutions that have been identified below will need considerable time, effort and resources for successful implementation. Although it is also true that some quick wins can be garnered from some of the proposed policy actions. The recommendations provided below should be seen as a framework for action as there is never a “one size fits all” solution and good governance and patience, accompanied by tailored language and approaches as well as the involvement of the sectors as a whole will be fundamental in achieving success.

2.2 The development of key recommendations

In order to develop a concrete set of recommendations the Task Force agreed on the development of a key set of themes where a strong focus was placed on ensuring that the principle of “Avoid, Shift and Improve” (A-S-I) remains at the centre of actions to be taken. It seeks to achieve significant greenhouse gas (GHG) emission reductions, reduced energy consumption and less congestion. Initially developed in the early 1990s in Germany, it is now considered as the ‘gold standard’ on how Governments can define policy initiatives to minimize the environmental impact of transport leading to an improvement in the living standards of citizens. Inspired by the principles of sustainability, the approach focuses on the mobility needs of people instead of car infrastructure and can best be summarized in the figure below. 39

Figure 8: Avoid-Shift-Improve instruments

Source : TUMI 2019

This principle has been applied throughout this document in a wholistic manner, taking into consideration the interaction of the three sectors of THE PEP, whilst at the same time recognizing that the transport and mobility sector needs to evolve beyond established practices and policies.

Based on this, and on discussions within the Task Force the following macro themes were agreed on as a basis for the recommendations:

1. Theme 1: Consideration of public space allocation for all modes of movement in the urban, peri-urban and rural environments with emphasis on the opportunities offered through spatial planning and infrastructure investment.
2. Theme 2: Increasing investment in public transport to meet current and future needs as well as to ensure that it is safe (and attractive to use) for users and workers.
3. Theme 3: Encourage the adoption of e-mobility solutions as a fundamental part of powering public transport and active mobility.
4. Theme 4: Introduce mobility management solutions to manage transport demand in an environment-friendly and healthy way taking into account the user-perspective/raising awareness of transport users, to facilitate the switch to greener modes of transport and to make the transport system more efficient. A focus should also be on innovative solutions such as sharing mobility, tele-work/home-office, green logistics and delivery and environment-friendly solutions for the “first and last mile” in the transport chain.
5. Theme 5: Facilitate the adoption of innovation and technology in transport to increase accessibility and safety and to reduce emissions and environmental impacts leading to increased health benefits.
6. Theme 6: Supporting active mobility as a sustainable and healthy mode of transport.
7. Theme 7: Rebuilding the transport system in a fair and inclusive way while avoiding social disparities and particularly considering the needs of vulnerable and disadvantaged groups in society. Take into account the social dimension of pandemics as well as the need for a just transition towards a green and healthy transport system.

The challenges identified in each of these themes aim to reinforce positive actions that have taken place during the pandemic but also to avoid a “lock-in” situation of negative practices that have evolved. In doing so, the recommendations seek to set challenging but achievable targets for member States. Each theme is structured as follows:

- Introduction
- The issue at hand (with the inclusion of relevant examples)
- Outcomes and conclusions (then summarised in the form of key recommendations in Chapter 3)

The themes and related recommendations have been developed with the aim of going beyond what has been the crux of activities within THE PEP in order to set the foundations for a transport sector that can lead and shape the transformation of the urban and peri-urban environment, also through appropriate spatial planning and economic policies, rather than having to catch-up as has been the case in the past.
2.3: Theme 1
“Consideration of public space allocation for all modes of movement in the urban, peri-urban and rural environments with emphasis on the opportunities offered through spatial planning and infrastructure investment.”

Introduction

Theme 1 examines social, economic and environmental considerations, reviews the emerging importance of developing practices and explores their impact on mobility and on the communities these systems serve with particular emphasis on public space and spatial planning. Wherever possible, the work is illustrated with examples of best practice that highlight where the issue has been addressed successfully.

The issue at hand

What is the impetus for Green and Healthy Sustainable Transport? This Task Force title plainly implies more than a recognition of the interaction between transportation, health and the environment and underlines that the effectiveness and efficiency of transportation (from the point of view of the public authority, the operator and the user) between nodes cannot be an end in itself but rather must, of itself, be green, healthy and sustainable in respect of those that it serves. In other words, there is implied a higher purpose to enable mobility for people to access goods and services in a healthy, efficient, comfortable and environmentally friendly manner. That this is true has been clear for some time. In the midst of a global pandemic that shows little sign of abating until a vaccine can be found, this aim becomes an imperative. Where is this imperative more clearly evident than in the need for balanced and well-designed allocation of public space where the day-to-day interactions of people’s lives are played out.

Today it is recognised globally that physical activity is important for physical and mental health for all and therefore active travel for everyone becomes extremely important. The mobility systems provided to deliver access to goods and services need to be designed in a manner that encourages walking, cycling and wheeling with an emphasis on connectivity at the start and end of journeys and interchange along the route, and which help tackle urban congestion, the costs of which put a drag of several hundreds of billions of €s/$s on the world economy. Of equal importance is the recognition by most countries that decarbonisation must proceed hand-in-hand with this aspiration to deliver widely accessible active and eco-friendly movement systems.

There is a need therefore for an ambitious and imaginative aspiration or vision for transportation across the UNECE Region that, within the overarching context of the SDGs connects the issues of decarbonisation, physical activity, environmental consciousness and public health.

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40 Ruffino, P. et.al. Social costs and benefits of post COVID-19 lockdown mobility scenarios in Italy, Decisio, (English version August 2020)
41 Where wheeling refers to all other forms of wheeled personal transportation (excluding cars and motorbikes)
42 EEA. The first and last mile - the key to sustainable urban transport, Transport and environment report 2019, 2019
The first step in achieving this aim is to realise that all these objectives are inter-related and action in pursuit of their achievement requires to be integrated. It can no longer be the case that programme for decarbonisation, health, and mobility can be seen and addressed as separate matters.

As Higgs remarks in his recent book 'if we are to build the city of the future, it follows that we must first of all imagine it'.44 Imagining and delivering such interconnection and integration cannot be achieved only by analysis and quantification, it requires design solutions that places people and their needs at the heart of the process. This means understanding not only the principles of engineering and physical design of artefacts, it also demands that we must master the opportunities presented by both service design (people-centred service design is the activity of planning and organising people, infrastructure, communication and material components of a service in order to improve its quality and the interaction between the service provider and its customers and their quality of life)45 and universal design (the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, gender, ability or disability).46 The allocation of public space should be designed to meet the needs of all people who wish to use it, for example through the implementation of such initiatives as the “super-blocks” in Barcelona. While quick solutions of converting road space to cycle lanes can provide benefits it is also important to consider longer term planning where a better solution may be to create routes for cyclists through other public spaces.

Good examples include The Mayor of London Transport Strategy - adopted in 2018 – which revolves around the Healthy Street Approach. This approach uses ten evidence-based indicators of what makes streets attractive places. Working towards these indicators will help to create a healthier city, in which all people are included and can live well, and where inequalities are reduced.47 The overarching goal of the Mayor’s Transport Strategy is that by 2041:

- 80 per cent of journeys are to be made by walking, cycling and public transport
- All Londoners get 2 x 10 minutes of active travel each day
- 70 per cent of Londoners will live within 400 metres of the London-wide cycle network

The strategy puts public health at the heart of city planning processes, highlighting the link between free movement of people, environmental benefit and public health in every measure undertaken.

The Ghent circulation plan adopted in April 2017 is another great example of people centric urban planning.48 The ultimate goal of the Circulation Plan is to unburden the city centre of car traffic, while improving the liveability of the city for citizens and visitors and guaranteeing accessibility for pedestrians, cyclists, busses and trams. To prevent cars from needlessly crossing the city centre, the Circulation Plan divides the city into six sectors and one extensive car-free/pedestrian zone, whoever wants to move from one sector to the other, needs to make use of the inner city ring, therefore freeing up a lot of space within the sectors, space that has been reallocated to public transport,

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46 The term universal design was coined by the architect Ronald Mace to describe the concept of designing all products and the built environment to be aesthetic and usable to the greatest extent possible by everyone, regardless of their abilities. See for example: Steinfield, E. & Maisel, J Universal Design: Creating Inclusive Environments, 2012
48 Ghent circulation plan aims to make the city car-free, see video at: https://vimeo.com/379854529
cycling and walking. Thanks to the Circulation Plan, also cars that absolutely need to be in the city centre - such as suppliers, health care providers or elderly people - can reach their destination faster. One of the most inspiring aspects of the Ghent work is that very little new infrastructure was necessary and instead space was repurposed and given over to people for walking, cycling and wheeling.

Related to this example is also the concept of creating green corridors where natural planting and water systems can be integrated into paths and routes used by those walking, cycling and wheeling creating a symbiotic relationship between the natural environment and the people using it for their mobility needs. These corridors need to be planned effectively to maximise the benefits of the environment and the general public by either retrofitting green infrastructure into existing transport solutions or by ensuring that ex novo urban planning merges current green infrastructure into mobility design. Examples of this include the Brussels Green Belt that is a 63km route that circles Brussels allowing pedestrians and cyclists to travel along a natural environment49, as well as the 'landscape axes' developed in Hamburg linking the green rings on the outskirts of the city to the city centre.50

It is only by these processes that we may properly achieve the interconnected and integrated design we seek. This vision needs to be supported by action intended to deliver on its aim. Beyond action, it is imperative to describe the outcomes that we seek and the enabling processes and actors that can deliver.

The current crisis is setting the scene for doing what so many cities wanted but lacked the opportunity to do. Through transport-oriented development, the need for motorised travel and the trip length can be reduced. Residential, work and leisure districts must become more closely connected and intermixed. Cities must prioritise accessible, safe, breathable, and walkable streets through urban planning, putting people at the heart, by implementing the careful coordination of land use, spatial and long term mobility planning with the engagement of all stakeholders from project start. There is now a golden opportunity for policymakers to integrate and strengthen these policies.

Outcomes and conclusions

As much as action is important, progress towards good outcomes is essential. The vertical integration of the SDGs (particularly SDG 11 on Sustainable cities and communities, Target 11.2) with policy and design practice at the level of member States and regional and local government will be important. A number of desirable outcomes and conclusions can be identified with their respective enablers that are particular for this theme.

Outcome: Enhancing accessibility for all including to green, blue and quiet places and ensuring the needs of vulnerable groups

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49 https://www.discoveringbelgium.com/walk-cycle-promenade-verte/#:~:text=The%20Promenade%20Verte%20is%20a,discovering%20its%20history%20and%20nature.&text=Its%20route
Enablers:
- Ensuring an optimal density of development integrating housing, essential services (e.g. education, health, retail, leisure etc) and employment;
- Increased digital connectivity.
- Ensuring a common and coordinated approach to integrated spatial and transport planning.
- Ensuring all-encompassing transport and mobility impact and cost benefit assessments are carried out as a precondition of any significant development with the support of tools such as HEAT to support robust financing of initiatives.
- Having routine assessment in the city by mapping access to green, blue and quiet places, GDP and health to inform future planning decisions.
- Designing new houses (e.g. social housing) with access to green and blue spaces within walking distance.
- Creating green corridors that combine the benefits of ecological corridors with active mobility options (e.g. the Brussels Green Belt and the landscape axes in Hamburg).
- Capitalising on the low traffic levels in cities around the world to undertake tactical cost-efficient investments such as widening sidewalks, facilitating step free access, establishing dedicated bus lanes to name a few.
- Balanced social development incentivised by economic, fiscal and regulatory incentives (e.g. provision of social housing).
- Ensuring that spatial planning guidelines and policy decisions have a strong focus on responding to the needs of vulnerable users, in particular people with reduced mobility.
- Developing, where possible, short-distance cities (the 15- or 20-minute city, and the ecosystem of the last mile) designed to bring about urban and transport planning and design aimed at improving the quality of life for people and meeting their by providing access to everything they need within a 15-minute radius of their home.

Outcome: Minimising the adverse impact of motorised road vehicles on urban settlements and the prioritisation of sustainable mobility

Enablers:
- Prioritising public transport for longer trips and active travel for short trips where public transport is not available (see Theme 2).
- Facilitate connectivity through efficient hubs for interchange to public transport.
- Weather-proofing of, and parcel/push-chair/bike etc. storage facilities at secure and welcoming hubs.
- Focusing motorised traffic on fit-for-purpose routes.
- Discourage motorised vehicles through use of fiscal and physical measures and the elimination of ‘rat runs’ with the aim of internalising external costs; (Ghent and Barcelona examples)
- Facilitate the development of urban logistics hubs outside urban centres to enable consolidation of ‘last mile’ deliveries;
- user-friendly Parking policy

Outcome: Ensuring informed public support and participation in the planning process for a just transition
Enablers:

- Accelerate comprehensive efforts by public authorities to identify public concerns relevant to the future of sustainable mobility.
- Ensuring that there is a strong partnership between local authorities, transport operators, the community and the private sector.
- Information programmes directed at showing how improved public transport and active travel, together with appropriate spatial planning initiatives, can ameliorate those concerns.
- A continuing educational and information campaign analogous to that discouraging cigarette smoking.
Box 1: Involving the community

Partnerships

Creating partnerships with actors in the local community is an essential tool to deliver long lasting transformative change. Some of these include:

- Partnerships with local business owners (Dublin pedestrian street trials): Success story in Dublin, local coffee shop owner wrote a message on Twitter asking what would happen if his street was pedestrianised in an effort to revamp his business post-lockdown, the city council got in touch and the whole street was trialled as a pedestrian street for a few months. People are asking to keep it pedestrian.51
- Partnership with schools (Dublin back to school)
- Partnership with urban logistics players: Thanks to a visionary partnership between bpost (the Belgian company responsible for the delivery of national and international mail) and the City of Mechelen, a new ‘Ecozone’ for delivery and pick-up of parcels has been established in the summer of 2020. The two-year pilot project has been launched to tackle the challenges of the rising on-demand economy, while addressing congestion, improving air quality and finding best ways to serve the citizens. The ‘Ecozone’ is an area in the centre of Mechelen that has been equipped with 19 pick-up points – a total of 50 new Parcel Lockers spread across the city centre. Moreover, delivery to the new lockers is done with bike trailers in the inner car-free city core and with electric vehicles in the overall zone. The Parcel Lockers – being located in open spaces - are accessible 24/7, easily movable, and operate without electricity and anchoring. The collaboration between bpost and the City was essential to identify the best locations to place the Lockers within the city, the objective in the location hunting was to place the Lockers within a maximum 400 meters radius from housing, public transport hubs, shopping streets and other strategic locations, or how it is described by bpost and the city within ‘slippers distance’.52
- Partnership with employers (Smart ways to Antwerp, Belgium): The city of Antwerp in Belgium offers tailored support to employers in the region to help them create sustainable mobility policy for their company. (https://www.slimnaarantwerpen.be/en/employers) The companies can get in touch with the Smart Ways to Antwerp team within the city administration and:
  - Receive support in developing a company mobility policy
  - Provide a ‘mobility scan’ for the company. A mobility scan is developed by inputting the home addresses of the employees as well as information such as their children’s school - if they would have to bring the children to school before work on a daily commute - in order to assess what travel alternatives to using their car would that specific employee have. Once the mobility scan is developed, the city also offers one-on-one meetings with employees willing to switch their travel behaviour. The mobility scan helps highlight what impact switching to sustainable travel modes would have in terms of reducing the CO2 footprint of the company as well as the health benefit for the employees, and the financial benefit for the company (research show that employees that use active travel to reach work have on average

51 For further good examples from Dublin, see also: https://twitter.com/DubCityCouncil/status/1298650758829740032, https://twitter.com/DubCityCouncil/status/129529391583118313, https://twitter.com/DubCityCouncil/status/1296466273296154625
52 Bpost partnership in Mechelen: https://www.bpost.be/nl/ecozone-mechelen
1.3 days less sickness absence per year, while also being more productive and concentrated throughout the day)

- Offers custom advice and various specific products and services, such as company packages for electric bikes trials as discounted price, public transport subscription, car-pooling options, etc.

**Engagement:** Participatory consultations need to be initiated with all relevant stakeholders to ensure that there is significant buy-in from the various community members.

**Communication:** ‘The single biggest problem in communication is the illusion that it has taken place.’ George Bernard Shaw. While the link between decarbonisation, physical activity, environmental consciousness and public health might seem obvious, there is a substantial risk in making the assumption that it constitutes general knowledge. While the first step should always be putting in place physical infrastructures that equip people with the possibility of making the right choice - e.g. a well-developed, safe cycling network; park and ride facilities; last mile options etc. - incredible opportunities lie in powerful communication. A great example of integrating vision, infrastructure planning and communication efforts is offered by the work done by Transport for London (TfL).
2.4: Theme 2
“Increasing investment in public transport to meet current and future needs as well as to ensure that it is safe (and attractive to use) for users and workers.”

Introduction
Public transport has been, and remains, the heart of mass urban transport mobility solutions. It is a fundamental tool for ensuring accessibility for citizens to jobs, schools and leisure. According to data from the International Association of Public Transport (UITP), 60 billion passenger journeys are made per year on public transport, it contributes between €130 and €150 billion per year to the economy, equivalent to 1.0-1.2 per cent of GDP in the European Union alone.

The central role of public transport in accessibility has been identified in SDG target 11.2 which states: “By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.” The related indicator seeks to measure: “the proportion of population that has convenient access to public transport, by sex, age and persons with disabilities.” The main goal here is to: “Provide access to safe, fast, comfortable, affordable, accessible and sustainable transport systems for all by 2030.”

While there are concerns with this indicator, public transport is clearly the cornerstone and highlights the importance of the sector in improving the liveability of cities. In order to achieve this goal it is essential that key metrics (including proxy indicators frequently used by the sector) are developed looking at the use and frequency of public transport with the ultimate aim of increasing customer satisfaction, and consequently, increased use. Launched under the EU Urban Agenda a list of common indicators and best practice case studies on the walkability of cities and access to public transport (SDG 11.2 metrics) have been developed to complement the core SDG 11.2 indicator that can facilitate and better report progress against the SDG target. It will allow cities to learn and benchmark themselves against each other to enable SDG 11.2 implementation.

The COVID-19 situation has not changed this but has meant that some important changes need to be made to how it is used going forward. Before COVID-19 there existed significant underinvestment in public transport solutions across the region, the COVID situation has accentuated this shortfall. While policies towards improving public transport have always been at the heart of the activities of THE PEP (see Priority Goal 2 for example) the COVID-19 situation has pushed the role of public transport in a safe and secure transport environment to the forefront and strengthened its importance as a key tool for member States to achieve the Sustainable Development Agenda.

The issue at hand
For public transport to be the effective spoke in the transport wheel it needs to meet the needs of its customers and users. Something that is not always the case across the ECE Region. Furthermore, it needs to be safe and secure for its users and workers as well as providing for likely future needs as demand grows.

Public transport does not however exist in a vacuum and needs to be part of an integrated transport and spatial planning system with a long-term vision on sustainable transport solutions (See Theme

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55 THE PEP From Paris 2014 to Vienna 2019: https://thepep.unece.org/node/87
For this integration to be effective it needs significant investment, above what is already being made available through current schemes, with investment focused both on the infrastructure side (including such things as dedicated lanes and prioritised intersections) and on the vehicles. Public transport also however needs to lead the transformation of transport systems rather than follow, where sufficient public transport needs to be the cornerstone of a successful transport system which is well integrated with other modes and in the urban environment, before any user can willingly switch away from their private vehicle.

Too often the level of investment is insufficient to fund the minimal level of service required by customers. Furthermore, it is sometimes not allocated appropriately to meet these needs.

Increased investment in public transport can lead to a number of benefits for the community. For example the recent THE PEP study on Jobs in Green and Healthy Transport56 showed that a doubling of investment in public transport would lead to an increase of employment across all sectors in the ECE Region of 2.9 million jobs, of which 1.8 million jobs in the ECE region transport sector alone. A previous study undertaken for UITP showed that doubling the public transport market share would see the number of employees working in public transport operating companies double from 7 to 14 million, including a labour productivity increase of 1 per cent.57

The introduction of automation in public transport is also likely to have an impact on employment in public transport. In this framework attention needs to be focused on identifying appropriate funding mechanisms to finance public transport. Relying on farebox revenue and local authority contributions will not be enough going forward. Grants to assist in the improvement of public transport from other national and supra-national authorities will need to play a role, as will collaboration with the private sector. The flexible use of green bonds to finance these investments will also be important in maximising the clear environmental benefits of public transport ensuring however that they are framed in a wider drive to extract environmental benefits in cities (as seen in Gothenburg, Sweden, for example) in line with THE PEP Goal 558.

However, it is not only an issue of insufficient investment. The ultimate purpose of public transport is to provide a service focused on facilitating accessibility to jobs, education and wider opportunities as identified in the SDG mentioned above. Therefore, it is important to ensure that better targeted investments in public transport, focusing on ensuring accessibility for all, which at the same time needs to offer good value for users and for funders.

According to UITP, at the start of the lockdown period, public transport farebox revenue fell by up to 90 per cent while operators maintained between 70 and 100 per cent of services, with an estimated loss in farebox revenue for 2020 of around €40 billion.59 In many cases, local authorities providing the non-farebox funding have, in many cases, not been able to take up the slack of this shortfall as funding support in this period from central government has been limited.

The fall in public transport usage mentioned above was initially due to the generalised lockdown but also due to some authorities discouraging its use either through the imposition of maximum capacity requirements due to physical distancing or through statements suggesting that people stay away. Currently, there is no evidence to support that theory that public transport can be a hotspot for the

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56 Jobs in green and healthy transport: https://thepep.unece.org/node/808
58 THE PEP From Paris 2014 to Vienna 2019: https://thepep.unece.org/node/87
spreading of the virus with operators significantly ramping up cleaning and disinfecting regimes to ensure the maximum safety of passengers. Notwithstanding these efforts, confidence in the safety of the public transport system remains low with the population perceiving public transport to be less safe and secure even if this is not the case. Reversing this remains the number one short term priority for local authorities and for operators as without an increase in confidence in the sector, passenger numbers will not return.

Even if it is acknowledged that zero risk doesn’t exist, public transport remains one of the safest ways to move around the city and keep cities alive even in the context of Covid-19. Today, there is enough evidence to demonstrate that, when measures recommended by the health authorities are implemented, the risk in public transport is very low.

The current pandemic has also highlighted the fact that an insufficient public transport network and fleet will lead to users switching back to private car transportation when users do not feel it is safe. It has also shown that there is a risk of social divisions and inequalities growing as those in disadvantaged groups, with lower income, often have limited options restricting their mobility choices. Public transport provides the possibility of increasing social cohesion however, this service needs to be affordable, shared and high quality, as well as well integrated into the local environment and with other transport solutions.

COVID-19 has also had a strong impact on behaviour with the working population with many companies embracing smart working, staggered hours and digital conferencing as a replacement for business travel. Some of these changes could remain in place going forward and public transport will need to adapt to reflect this change and other changes such as a shift of cultural and economic activities away from city centres for example by providing a more comfortable and reliable service and offering ancillary services to draw customers out of the private car and back to the bus and train noting that this will further impact the finances of operators.

In this respect, many cities are seeing the death of their urban centres as commuters are staying away and preferring or being required to work at home. Anecdotal evidence has shown that while in most of Europe 70-80 per cent of commuters had returned to city centres after the summer period and before the second wave of lockdowns, Great Britain, in the same period, had seen a return of below 40 per cent, with London at less than 20 per cent. It has been estimated that for every employee that works from home, there is one person that loses their job in a city centre. To some extent, these trends may be counter-balanced by a marked growth in the popularity of local centres.

Examples of positive investments in public transport

To regain people’s confidence in public transport after the COVID 19 crisis, France’s recovery plan devotes €1.2 billion especially for the development of public transport such as metro, tram, bus and RER metropolitan train services to provide mobility solutions that are eco-friendly in the densest urban areas. These resources complement the financing of local authorities and could allow for total investment in public transport close to €5 billion. This measure will generate over 55,000 full-time equivalent jobs.

In addition, the French recovery plan devotes €4.7 billion to support the rail sector to offer an attractive and efficient alternative to road transport, both for passengers and for goods. It will

61 https://yougov.co.uk/topics/consumer/articles-reports/2020/07/10/-covid-19-coronavirus-UK-high-street-local-effect
regenerate and modernize the national network and will invest in branch lines to increase the offer in less densely populated areas and better connect them to urban centres.

The Dutch Ministry of Infrastructure and Environment has pledged to ensure that all new buses in the Netherlands will be zero emissions vehicles from 2025. An agreement has been signed with representatives of all of the 12 provinces of the Netherlands in 2016 and several transport authorities already have bus companies that use electric vehicles. A requirement of the agreement is that electricity used by the new vehicles must be generated by renewable sources, such as solar panels or wind turbines. The use of hydrogen is also foreseen within the agreement. In 2020, 750 out of 5000 public transport buses were zero emission vehicles.

In Kazan (Russian Federation) pursuant to the principles of the sustainable development of the transport system, the city is contributing to the development of urban above-ground electric transport, including by creating a tram network, maintaining and developing a trolleybus network, renewing the public transport fleet. In Kazan, public transport has been segregated from other traffic and routes of communication. Furthermore, the introduction of priority public transport lanes in the main streets has helped to establish transport links between the residential areas, the city centre and streets with access to external roadways.62

Similarly, in Moscow, a number of initiatives have been pursued recently to promote the use of public transport. A number of infrastructure improvements have been introduced including the creation of bus lanes and priorities at intersections, the creation of dedicated public transport streets, the renovation of tram lines and the introduction of transit hubs such as the Kutusovskaya hub aimed at facilitating the switch between transport modes. In addition, efforts have been targeted at making public transport more attractive through improved information at bus stops and the installation of more automatic ticket machines. This has been coupled with the upgrading of the tram, train and bus fleets to electric traction where possible and the addition of other amenities to the fleets to make them more comfortable.63

Outcomes and conclusions

Accessibility for all can only be guaranteed with public transport at the heart of an integrated urban transport system. Investing in developing and improving public transport, especially in the take-up of electrified public transport solutions, is also one of the best strategies to improve road safety. Recent messages encouraging people to avoid public transport for COVID-19 reasons need to be reversed as there is little evidence to date that the virus has been transmitted through public transport. This has created a negative perception amongst users that could have a long-term impact. Updated messages should focus on highlighting the extra efforts that are being made by operators and local authorities in reducing the risk of exposure during pandemics and that currently it is safe to return to using public transport with the protocols that have been enacted aimed at, for example, reducing capacity and increasing cleaning. These messages will need to highlight how the cleanliness measures will continue into the future to ensure that confidence is maintained going forward and because users will demand it. Cities and countries should invest in recovery and resilience for a systemic socioeconomic transformation, where public transport and active mobility play a key role to build back better.

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62 “A Handbook on Sustainable Urban Mobility and Spatial Planning” 2020 UNECE: https://thepep.unece.org/node/815
63 Ibid.
Member States should consider how to maximise the use and efficiency of public transport systems in the post-COVID-19 world considering the following:

**Efficiency:**

- Ensuring appropriate priority is given to public transport in the city environment through dedicated or separated infrastructure to make it faster and more reliable than the private car.

- Ensuring that the public transport solutions adopted, as the backbone of urban transport solutions, are planned effectively to create a well-connected and integrated system across transport modes (including active and shared mobility solutions) to facilitate an increase in usage and reduce car use.

**Placing the user at the centre of decision making:**

- Ensuring that accessible solutions are found for all sections of society thus providing easy access to public transport for all communities with particular focus on vulnerable users and persons with reduced mobility. All this in the framework of ensuring that the service that is provided meets to the needs of the users in order to drive efficiency.

- Ensuring that what is offered is affordable, reliable and provides door-to-door solutions for users with public transport at the centre, especially given new travel patterns post-COVID-19. A thorough analysis of the change in demand patterns is essential here.

- Facilitate the introduction of integrated ticketing solutions across public transport modes and, where possible with active and shared e-mobility solutions.

- Pursue clear measures to restore the trust of the passengers to public transport highlighting the efforts made by operators to provide a safe and high quality service in the face of the pandemic coupled with information campaigns on the long-term safety benefits of public transport.

- Ensure that the information provided online is accurate, simple, understandable, up-to-date and accessible to all as recommended in Theme 1 on communication with stakeholders.

Guaranteeing appropriate levels of investment for the creation of safe public transport for passengers and workers by:

- Highlighting public transport as the priority for decision-makers in all countries. Public authorities should take a leading role in this ensuring that there is coordination of funding and planning between local, regional and national authorities, each with their clearly identified tasks.

- Using alternative sources of funding for public transport such as green bonds, public private partnerships and getting local businesses to invest in public transport to allow them to extract the benefits of greater usage.

- Ensuring that existing funding for public transport is focused on ensuring comfort, reliability and frequency to encourage further modal shift. The funding should be closely linked to the level of service offered.

- Re-directing public sector funding to sustainable transport solutions such as public transport, particularly focusing on investment in the electrification of public transport.

- Ensuring that local authorities have funding certainty for public transport (potentially through allowing the creation of ring-fenced funding schemes where the revenue from a specific existing or new tax could be earmarked exclusively for public transport).
Governments currently deciding how to allocate some of the biggest public funds in history, must include, prioritise and secure funding for public transport in financial COVID Recovery Plans and maintain and even step up planned investments in public transport infrastructures and services, due to their various positive multiplier factors which will help deliver on multiple SDGs.
2.5 Theme 3
“Encourage the adoption of e-mobility solutions as a fundamental part of powering public transport and active mobility.”

Introduction
The introduction of electric mobility solutions into the transport environment has gradually increased throughout the ECE Region in the form of electric private cars, electric public transport solutions and electric micro-mobility solutions.

The introduction of electric cars has been gradually increasing over time with varying degrees of take up across different countries. EEA estimates64 for 2019 show that the share of newly registered electric vehicles (battery electric and full hybrid) ranges from 56 per cent in Norway to below 1 per cent in Italy and Spain. A wider uptake of electric private vehicles would reduce the direct emissions of the road vehicle fleet but does not address the other key pillars of the development of sustainable transport including safety, health and reducing congestion. It would, however, cover those urban freight movements that cannot be carried out by other forms of transport (cargo bikes and barge – see Theme 4).

The electrification of public transport, especially above ground public transport, through the introduction of electric buses, trolley-buses and the installation and upgrading of tram lines is a key tool for increasing the sustainability of urban transport solutions. The switch away from diesel powered buses can have a strong direct impact on emissions in cities as well as making the use of public transport more desirable.

Various types of e-micro mobility can be found on the market, a typology of the different vehicles was developed by the International Transport Forum (ITF) in its Safe Micromobility Report (Figure 9).

E-micro mobility vehicle sales have experienced significant growth over the past years. As an example, about 20 million bicycles and e-bikes are sold in the EU annually. The overall sales value continues to rise due to the increase in pedal assisted e-bikes sold which grew by 23 per cent from 2018 to 2019, reaching 3.4 million units in 2019. This represents 17 per cent of the total bicycle sales in the EU overall and even going up to 50 per cent in some countries like the Netherlands and Belgium. The Confederation of the European Bicycle Industry (CONEBI) expects this positive trend to continue over the next years, predicting e-bikes sales up to more than 8.5 million units in 2025.66

A recent study of BCG67 (Boston Consulting Group) looks at how COVID-19 will shape urban mobility. The study looked at urban resident’s movement patterns in China, Europe and the United States. During the first lockdowns the use of nearly every mode of transportation fell strongly, only the usage of privately owned bicycles, e-scooters and walking increased in all three regions. Bike sharing usage increased in the United States and China as some operators implemented sanitizing and other hygienic measures as well as reduced their prices.

Looking at the change in urban mobility use immediately post-lockdown it is expected that people will use their own vehicles, be it bicycle, scooter or car, more often. For example, in the Netherlands there has been a surge in the sale of e-bikes during the pandemic. A consumer survey conducted in October 2020 by BEUC shows consumers are likely to prefer individual forms of transport and more local travel following the pandemic68.

Source: International Transport Forum65

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65 https://www.itf-oecd.org/safe-micromobility
66 CONEBI Bicycle Industry and Market Profile 2020
The growth of e-mobility also concerns cargo e-bikes and other e-vehicles used for freight and delivery. During lockdown, many citizens have turned to online shopping and the parcel and package delivery sector has grown. Large operators such as DHL and GLS as well as local suppliers have added electric vehicles to their fleets. Cargo e-bikes can contribute to reducing emissions and congestion as demand for city logistics services continues to grow.69

The issue at hand

The use of e-mobility solutions can have a positive impact on a number of areas. On accessibility, the availability of micro-mobility solutions plays a role in catering for last-mile mobility needs in large cities and widens the catchment area of public transport hubs, reducing the time needed to reach them from across the city. The availability and distribution of shared electric vehicles is key to ensure that it effectively complements public transport networks. The use of electric public transport solutions further improves accessibility by introducing modern mass transit solutions that increase the comfort of users.

The environmental impact of electric public transport is lower compared to cars, diesel powered buses and traditional fuel-powered scooters, as electric public transport emits both less CO2 and less particulate matter when coupled with charging infrastructure that is fuelled by electricity from renewable sources. As part of the urban mobility ecosystem, e-micro-mobility has the potential to reduce end-use environmental emissions.70 However, life-cycle assessments (LCAs) are necessary to reveal the total environment cost of large-scale deployment of e-mobility solutions, as shown in recent work at the European71,72 and international73 level, and to be able to compare the costs and benefits of the different e-mobility solutions available. This will help mobility actors understand the upstream impacts of large-scale e-mobility on environmental resources.

People worldwide are becoming more and more sedentary and are often not meeting the amount of physical activity suggested by the WHO. As identified in chapter 1 this can have a negative effect on their health. Encouraging the use of some e-micro-mobility solutions that require physical activity such as e-bikes, especially for the first and last mile, and as a complement to electric public transport solutions, could make an important contribution to getting people more active and improve air quality.

E-mobility solutions can be more inclusive and affordable for users, although may not be the most economical solution for public authorities interested in investing in electric public transport. Shared electric vehicles or bicycles, easily rented by non-regular users through mobile phone apps, relieve passengers from the burden of ownership and related maintenance costs and make it more attractive to use public transport in combination with shared vehicles. Incentives in this field should be focused on sustainable transport mechanisms, zero / low-emission vehicles, electrification of public transport by road or new operational services leading to low emission mobility. At the same time, they should reverse existing “wrong” incentives, financial advantages or fiscal privileges like exemptions, or

69 https://trimis.ec.europa.eu/sites/default/files/documents/1_opportunities_and_challenges.pdf?utm_source=Ricardo-AEA%20Ltd&utm_medium=email&utm_campaign=11810012_TRIMIS%2FID%2FED60132008%2FDigest_Sepemb.png&utm_m_t=0,0,0,0
70 https://www.eea.europa.eu/publications/the-first-and-last-mile
73 https://time.com/5659653/e-scooters-cycles-europe/
refunds of mineral oil taxes linked to traditional fossil fuels, for both, private individual and public transport.

Often the adoption of these solutions for micro-mobility is not accompanied by the introduction of dedicated and appropriately protected infrastructure which can have a consequential effect on safety for users and for those around them, a rising concern in the use of e-micro-mobility solutions. There are synergies between infrastructure for public transport and e-micro mobility, including in the development of charging infrastructure, which can lead to greater efficiency of urban transport systems as a whole.

Both themes 1 and 2 speak of the need to ensure that both planning and public transport take into consideration the role of e-mobility and related solutions.

The common thread across each of the issues highlighted above is a lack of regulation for some of the new forms of micromobility. As discussed in more detail in Eltis74, there is a lack of consistent regulation to manage micromobility across Europe. Confusion and illegal behaviour will grow in the absence of clear rules on where micromobility can operate and how (e.g. speed limits and priority). It is generally agreed that legislation is required for micromobility solutions to work in harmony with conventional transport.

Examples of promotion of e-micro-mobility solutions

France made 60€ million available to boost e-micro mobility solutions after the first lockdown. This money will be used for a variety of measures including the construction of new cycling infrastructure. As a part of this, Paris and several other large cities have announced large rollouts of cycle lanes for during and after the lockdowns. Paris alone is planning to create 650km of cycle paths.

In Greece a subsidy for the purchase of bicycles as well as scooters and electric cars was announced. The law provides a discount equal to 15 per cent of the retail price of cars (with a limit of €5,500), 20 per cent for scooters and 40 per cent for bicycles.75

During the 2020 COVID-19 crisis, the Italian government introduced a "mobility bonus", providing citizens living in the larger urban areas a one-off voucher of up to EUR 500 (or 60 per cent of the purchase cost) to buy bikes, e-bikes or scooters. The bonus scheme appears to have boosted sales of two-wheelers. Recent surveys show that more than 2.5 per cent of the population owned an e-scooter by September 2020 and Italian bicycle retailers remarked a 60 per cent increase in sales in May 2020 in comparison to the year before.

Outcomes and conclusions

Given the important role that e-mobility is likely to have in future developments of the transport sector, it is important to ensure that:

- A comprehensive assessment of the impact of large-scale implementation of all types of e-mobility solutions on pollutant emissions, health and congestion of street and road networks is carried out. This needs to be in terms of emissions - both in terms of end-use emissions, for

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which tools such as urban transport roadmaps can be used, and in terms of emissions in the "life cycle");

- Long-term infrastructure investments are promoted that make the use of e-micro mobility more attractive and safer for users;
- incentives to use e-mobility vehicles are applied if their use provides environmental and health benefits;
- there is good cooperation and coordination between local governments and solution providers for the sharing of e-mobility facilities;
- e-mobility vehicles, and especially lightweight electric vehicles, marketed meet high standards to make them safe to use;
- there is the possibility of cooperation between the public and private sectors to encourage investment in e-mobility infrastructure and related services.
- linked to the public information accessibility recommendations raised in previous themes, there is support to cities to set up interoperable infrastructure and better cross-modal information. Better infrastructure (both digital and technical) will encourage light electric vehicle sharing solutions, such as bike sharing systems. Furthermore, better infrastructure will also encourage intramodality in general, meaning a seamless use of different modes of transport, for instance combination of public transport with e-micro mobility solutions.
2.6: Theme 4
“Introduce mobility management solutions to manage transport demand in an environment-friendly and healthy way taking into account the user-perspective/raising awareness of transport users, to facilitate the switch to greener modes of transport and to make the transport system more efficient in the urban, suburban and rural environment.”

Introduction
Priority Goal 3 of THE PEP identifies the need: “to manage sustainable mobility and promote a more efficient transport system” thereby already identifying the important role of mobility management in the creation of green and healthy sustainable transport systems. Since the inclusion of this goal as one of the key activities of THE PEP in the Amsterdam declaration76 in 2009, and following the creation of initiatives such as the European Platform on Mobility Management, the role of incentivising the switch away from private car use through mobility management has grown significantly.

As a cornerstone of its urban mobility policy, the European Commission strongly recommends that European towns and cities of all sizes should embrace its concept of Sustainable Urban Mobility Plans (SUMPs). These can vastly improve the overall quality of life for residents by addressing major challenges such as congestion, air/noise pollution, climate change, road accidents, unsightly on-street parking and the integration of new mobility services. The guidelines for SUMP have been updated in 201977 and are available in English, Mandarin and Hungarian with more translations following during 2021.

The attractiveness of adopting mobility management (MM) solutions in cities, industrialised but also rural communities is that they are often low-cost solutions that can have a significant impact on reducing car usage. This can be through mass public transport solutions in cities but also through micro public transport solutions in rural or suburban areas integrated with ride sharing and active mobility solutions.

The solutions that have been adopted over the years have focused on the first and last mile, often on home/work or home/school trips but are increasingly including shared mobility solutions, leisure and tourist mobility, as well as solutions around major sporting events and urban freight initiatives. Often these solutions have been closely integrated with local public transport options.

The issue at hand
Even though the use of such solutions is growing, many parts of the ECE Region have yet to implement such practices or to fully pursue cross-modal integration options. The aim of this theme is to introduce mobility management solutions to manage transport demand in an environment-friendly and healthy way taking into account the user-perspective/raising awareness of transport users, to facilitate the switch to greener modes of transport and to make the transport system more efficient.

The current COVID-19 situation has allowed for the possibility for alternative MM solutions to be identified, coupling working at home solutions with staggered working hours as well as increased home delivery of goods and services. It has also meant that many people have returned to the

76 The Amsterdam Declaration: https://thepep.unece.org/node/95
77 https://ec.europa.eu/transport/themes/urban/urban-mobility/urban-mobility-actions/sustainable-urban_en
private car and have adopted active mobility solutions, especially cycling, as authorities have sought to discourage the use of public transport (see discussion in Theme 2).

In this framework it is also important to consider the role of freight movements in the urban environment. Managed mobility solutions have focused historically on passenger movements with only a small number of projects addressing urban freight movements. However, a large amount of traffic is caused by freight deliveries to the centre of cities. COVID-19 has, to a certain extent, decentralised these freight movements away from the city centres to residential areas, potentially reducing congestion, but not reducing overall emissions. On the contrary, emissions from delivery may have increased as a result of this shift. On one hand, local shops that may have previously been reached on foot from the place of employment or place of residence now deliver purchased items to homes. However, on the other hand the efficient delivery of goods by an integrator (for example a courier company) rather than each household driving to the stores may have reduced emissions.

In every field of action aimed at promoting low emission, sustainable and healthy mobility, it should be ensured that private initiatives and business-innovators (as mentioned in Theme 5) can be easily integrated into the actions of public authorities also through appropriate stakeholder consultation.

Now is the time to accelerate the implementation of such initiatives in order to capitalise on the restructuring of work commitments in light of COVID-19 restrictions as well as the potential evolution of the home-school routine. It is also important to facilitate the adoption of such initiatives so that those who need to return to some form of commute have the tools at their disposal to do so in a sustainable manner. For those that don’t, good digital connectivity will be key.

While many of the solutions that have been adopted have been local in nature, in some cases, such as in Austria, these initiatives have been coordinated at a national level to ensure that national priorities are pursued when implementing these schemes.

Examples of positive implementation solutions

THE PEP study on this subject - “Mobility Management: A Guide of International good practices”78, published in the first half of 2020 identifies a number of good practice examples of managed mobility solutions adopted across the region. Three of these examples that are of particular relevance here for their innovative approach are:

“National mobility management campaign in Austria: Klimaaktiv mobil”

The klimaaktiv mobil programme, Austria’s climate protection initiative in transport, is the main source for supporting and funding mobility management measures contributing to GHG mitigation. Through this programme, the Federal Ministry of Agriculture, Regions and Tourism provides active support for Austria’s cities, municipalities and regions, businesses, fleet operators and associations, tourism operators, schools, youth initiatives and citizens in the transformation towards clean mobility. The financial support programme covers alternative vehicles, hydrogen vehicles and electromobility, always based on renewable energy sources, the promotion of active mobility as well as mobility management and innovative mobility services. In addition to subsidies, the klimaaktiv mobil programme also comprises targeted group-specific consulting and awareness-raising programmes, partnerships, as well as training and certification initiatives.

78 Mobility Management: A guide of international good practices: https://thepep.unece.org/node/805
The five pillars of klimaaktiv mobil include:

- Consulting programmes;
- Financial support programmes;
- Awareness raising programmes;
- Training and certification; and
- Partnerships.

The successes of the klimaaktiv mobil programme (numbers up to 2018)

- More than 15,000 climate-friendly mobility projects initiated, implemented by around 12,500 businesses, 1,200 cities, municipalities and regions, 900 tourism and leisure organisations, as well as 400 schools.
- Current annual savings of approximately 450,000 tonnes of CO₂ are recorded.
- Financial support for mobility projects amounting to approximately €122.4 million, including approximately €112.6 million from the national funds of the Federal Ministry of Agriculture, Regions and Tourism, the Climate and Energy Fund and the national environmental support scheme, as well as €9.8 million from EU funds (European Agricultural Fund for Rural Development), having triggered an environment-related investment volume of €816 million.
- Around 7,000 “green jobs” were secured or created.
- Financial support for around 34,300 alternative fuel vehicles, including more than 31,600 electric vehicles, and approximately 280 cycling projects, including the expansion of cycling infrastructure.
- Training of roughly 2,100 klimaaktiv mobil competence partners, such as EcoDriving trainers, bicycle technicians, cycling instructors, youth mobility coaches and graduates of the “E-Mob-Train” training course on electromobility carried out in cooperation with partners and the certification of 38 driving schools.
- Around 77,500 children and young people as well as 5,000 teachers have been reached so far, and approx. 985,200 car trips and thus more than 800 tonnes of CO₂ saved. Along with some 115 youth mobility projects were implemented and more than 15,900 young persons were involved.

“Home to work mobility”

In 2016 Infineon Technologies Austria AG launched the mobility management initiative “Green Way” in order to promote sustainable mobility as an alternative to the daily trip to work by car. A mobility survey and an analysis of the employee’s residential location was carried out at the beginning of the project that provided useful insight on the mobility habits for home-work trips:

- More than 70 per cent of the employees travelled to work by car due to inadequate public transport connections, long commuting distances, shorter travel times and the perceived lack of alternatives;
- Only 25 per cent of the employees live within 5 km (road network) of the company, around 50 per cent lives within 10 km and more than 20 per cent over 30 km away;

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c. A considerable number of employees were willing to carry out at least part of their home-work journey by bike.

With this background, a number of specific mobility management schemes were adopted to facilitate modal shift:

a. Improvement of public transport  
b. Upgrading cycling related infrastructure  
c. Introducing reserved carpooling parking spaces and the development of a dedicated app  
d. The creation of electric mobility parking spaces  
e. Allowing smart working  
f. Communication and visibility programmes to facilitate take-up  
g. Other measures and local collaborations

As a result of these actions the amount of car trips fell from 76 per cent to 50 per cent, therefore 50 per cent of employees commute with sustainable modes of transport and the ongoing efforts continue to increase this percentage with a particular focus on public transport.

Other home to work solutions include the Dutch railways working closely with large companies to offer integrated train and cycle hire tickets to all employees and Google working on an application aimed at providing the quickest cycling route to a destination.

“Urban freight mobility management”

The city of Utrecht was concerned about the negative impacts of freight distribution in the city centre including damage, blocking of streets due to loading and unloading, crashes, noise and air pollution. As a result, over the years it has introduced different vehicle restrictions such as time windows for freight traffic to deliver goods and a low emission zone. One of the most successful initiatives was the introduction of waterborne freight distribution for last mile deliveries to the city centre to decrease city centre traffic and make full use of waterborne freight distribution.

The Municipality of Utrecht introduced waterborne freight deliveries through the establishment of the Beer Boat, a specially adapted diesel barge that carried out beer deliveries to bars and restaurants along the canals. This measure proved very effective in reducing the number of trucks and the related negative impacts at the city centre while it guaranteed the delivery of beer and compliance with labour laws (for carrying barrels and crates). Following the success of this service an electrically-powered vessel was introduced, increasing the load capacity to 18 tons while reducing emissions.

The development of this service has reduced congestion in the city and the electric vessel has led to a reduction of emissions of CO2 by 17 tonnes, nitrogen oxides (NOx) by 35 kg and PM10 by 2 kg per year. Deliveries have also become more efficient and faster. The success of this service has led to a further vessel being introduced for the collection of waste in the city centre and to similar services being introduced for construction equipment in other cities in the Netherlands.

It is important to highlight the key lessons learned as identified in this study:

- Ensure that there are alternatives to the car (public transport, cycling, etc.) and that these alternatives are accessible, affordable and efficient;
- Introduce both push and pull measures;
- Know the target group;
- Ensure there is a long-term approach with commitments from all stakeholders in the area and integration with other programmes;
- Dedicate resources to awareness raising and communications;
- Make it fun and rewarding.

These lessons are still of significant importance in the post-COVID-19 situation as the return to commuting into offices slowly picks up. This gives mobility management solutions a strong opportunity to influence the manner in which people move around cities as well as to and from cities.

**Outcomes and conclusions**

In order to ensure a holistic approach to encouraging green and healthy sustainable transport it is necessary to intensify the use of managed mobility solutions for passenger and freight movements across the region by drawing on existing experiences and coordinating their implementation at a national and international level. A key part of this will be to facilitate innovation and investment in managed mobility also to adapt to the post-COVID-19 situation. In so doing, it is important to ensure that national mobility management strategies are prepared with a strong focus on the use of new technologies, digitalisation and smart mobility solutions which seek to incentivise the user appropriately supported by strong awareness raising. Building on this, member States should facilitate the development of sustainable national, regional and urban plans for mobility management and mobility planning including through the introduction of Sustainable Urban Mobility Plans (SUMPs) or similar planning tools.
2.5: Theme 5

“Facilitate the adoption of innovation and technology in transport to increase accessibility and safety and to reduce emissions and environmental impacts leading to increased health benefits.”

Introduction

In the post-COVID-19 era, in what may come to herald a green and just recovery for global and local economies, transportation modes and networks will need to respond to new forms of urban and rural living, work patterns and modes of mobility. As mentioned in the previous theme, E-commerce has rapidly transformed consumerism and delivery logistics, leading to an increase in the last mile delivery to homes rather than businesses in city centres. For those wealthy enough, spending on online shopping worldwide increased by 40 per cent in March 2020 compared to 2019 values. New forms of production have promoted working from home, and will create new residential and commuting patterns. Freight, as well as personal transport sectors will seek to innovate, or apply existing technologies, to cater for these different transport and mobility demands.

Before the start of the COVID-19 pandemic technology was already changing the way we moved and worked. The “fourth industrial revolution” as it is often known, through its increased automation and the use of smart technologies had already found its way into our mobility patterns through our mobile phones, through the sharing economy and through the trials of automated vehicles on the road and on rails. This has been the basis for the acceleration of technological take-up during the pandemic and has laid the foundation for a step change in innovative transport solutions post-COVID-19.

The issue at hand

The challenge ahead for a green recovery, enhanced by technological innovation, will prioritise active travel and more integrated mass transit. Private vehicle usage, with the move to more affordable e-mobility and zero-emission vehicles, will remain a factor. Transformative action, however, will not only come about by technological innovation, but by human determination to ensure that transportation policies are centred on moving people, not cars, around cities and rural areas.

People and freight mobility, perhaps increasingly embedded in a mainstream adoption of the 15-minute city, will move towards more active travel modes such as e-cargo bikes, or zero-emission boats and trains, maximising the efficiency of existing linear infrastructure.

Now established Global Positioning System (GPS) and radio frequency identification technologies to enable time-spatial positioning has been complemented by movement tracking via fixed objects, such as mobile phone towers, entrance gates to urban rail and bus systems, and bike sharing docking stations. So-called smarter technologies provide not only management and warning functions to regulate and advise traffic flow. Artificial intelligence advances have moved beyond the successes of...

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80 https://www.statista.com/topics/871/online-shopping/
81 https://www.eltis.org/discover/case-studies/utrecht-sustainable-freight-transport-netherlands
82 Schwab, Klaus [12 December 2015]. “The Fourth Industrial Revolution”.
83 https://search.proquest.com/docview/2410837866/fulltextPDF/278EC054FF3043A9PQ/1?accountid=13042
accurate sensing, fast processing and reliable control, to possess higher order capacities for prediction, self-optimisation and interoperability.

The analysis of big data has fed into new forms of network analysis, but while technology has rapidly opened up these new frontiers of live data-driven transport planning and management, future steps should be careful not to let the macro override the particular context of the local – the key social, environmental and political contexts that shape consumer experience and responsive transportation delivery.

Cities and societies that are unable to adapt and adopt to innovate transport technologies face the risks of broken and outdated transport and regulatory systems; increasing air pollution, congestion and the diseconomies of dated, inoperative transport networks; disgruntled customers and users; and a lack of evidence-based, data-driven planning and management.

Outcomes and conclusions

Innovation and smart mobility solutions will be the cornerstone to a swift move towards sustainable transport solutions and the public and private sectors need to be in a position to embrace these developments. At the same time these new technologies need to be introduced in a manner that makes take up by the consumer easy and inclusive. To do this, a step-by-step process needs to be followed that puts the customer at the centre of the implementation of any solution. In doing this attention needs to be placed on:

- the expansion of integrated mobility as a service platform;
- encouraging the switch to zero-emission vehicles;
- ensuring that technology is focused on traffic monitoring and management solutions as well as enforcement requirements;
- considering the use of alternative technology solutions such as blockchain information systems to provide transparency in transportation management, planning and delivery;
- implementing flexible, responsive and fair revenue management systems that facilitate equal access to sustainable transport.
2.6: Theme 6
“Supporting active mobility as a sustainable and healthy mode of transport.”

Introduction
The wellbeing and happiness of our societies is essential to sustainable development and is driven by health, safety, freedom and natural surroundings. Sustainable transport and in particular, active mobility, must have a key role in achieving all this.

Active mobility in the form of walking and cycling as the healthiest and most affordable travel modes can help to mitigate the adverse effects of current transport trends, especially in urban areas. Regular walking and cycling as a means of transportation:

- reduces the risk of hypertension, coronary heart disease, stroke, type 2 diabetes, breast and colon cancer and depression;
- improves muscular and cardiorespiratory fitness, bone and functional health;
- is fundamental to energy balance and weight control;
- improves road safety (where active mobility infrastructure is segregated and safe) and air quality;
- reduces congestion, noise, energy consumption and CO2 emissions (when coupled with less car use);
- reduces need for more expensive infrastructure for cars as well as maintenance costs for existing roads (which needs to be compensated by public transport and active mobility infrastructure expenditure);
- improves accessibility and quality of urban life;
- contributes to the creation of inclusive, safe, liveable and resilient space
- ensures social equality and gender benefits
- supports the rural and local economy and job creation.

Active mobility solutions cannot be considered in isolation though and need to be coupled with a strong backbone of public transport (Theme 2) and with appropriate mobility management initiatives (Theme 4). They also need to be supported by a strong policy and regulatory framework. This is why the Ministers of transport, health and environment decided to initiate the development of a pan-European Master Plan for Cycling Promotion, which has been elaborated by THE PEP partnership on cycling involving 25 countries, the European Cyclists’ Federation (ECF) and the secretariats of the ECE Sustainable Transport and Environment Divisions and World Health Organization Regional Office for Europe (WHO/Europe).

The issue at hand
There are many studies that point towards the positive health benefits of safe cycling and walking including longer and healthier lives, improved mental health, reduced deaths, reduced serious injuries and reduced light injuries which also can happen to e-cyclists.84

During the pandemic crisis, the role of cycling and walking has grown as they emerged as viable mobility options for essential trips while supporting physical distancing and relieving the burden on public transport.

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84https://www.researchgate.net/publication/282752633_Cycling_for_transport_physical_activity_and_health_What_about_Pedelecs
British Cycling, an advocacy group, estimates that COVID-19 might prompt some 14 million Britons to choose a bike over a car, according to the World Economic Forum’s COVID Action Platform. Despite fewer people travelling overall during the crisis, the UK has seen around a 100 per cent increase in weekday cycling. At weekends, that increase has been up to around 200 per cent, compared to pre-COVID-19 levels. Cycling usage has seen a big increase in Scotland. Edinburgh for example saw weekday increases of up to 252 per cent and weekend increases of up to 454 per cent in the first three weeks of April 2020. In Glasgow, cycle traffic rose by 74 per cent.

Other European countries show similar trends for bicycles. In Paris, cycling increased by 40 per cent from March 2020 to the beginning of June 2020. In France overall, cycling increased by 85 per cent in June in comparison to before the lockdown period (January – March 2020). Post-lockdown Germans\(^{85}\) were cycling twice as much as they did before COVID-19. At one point, Germans were using their bicycles even four times as much as usually during this time.

In the United States, bike sales are booming. Sales of bikes, related equipment, and repair services almost doubled in March 2020 compared with the same period in 2019.

**How to support active mobility**

The measures for enabling the promotion of active mobility fall under the three overarching categories of: division of responsibilities; regulations and laws; and infrastructure.

Despite the technical, legal and administrative challenges to improve safety for cyclists and pedestrians, during the pandemic, measures were implemented almost overnight. This experience has demonstrated that authorities can be responsive and agile in times of need, and that promoting active travel does not always require time-consuming administrative processes. Authorities should encourage the **appropriate division of responsibilities** and review these practices and identify lessons learned for application under future similar circumstances but also in regular, everyday business.

Road traffic and traffic safety have a significant impact on active mobility; they are particularly important as pedestrians and cyclists are the most vulnerable road users and encompass all age groups. In this framework, **regulations and laws** need to be improved with increased focus on enforcing speed limits and prioritising pedestrians and cyclists on roads to improve their safety.

Active mobility needs to be supported by the dense, well-connected, well-designed, safe, and comfortable **infrastructure** that is fit for purpose and not focused on favouring the use of motor vehicles.

The disproportionate use of public space by motorized traffic gave the opportunity to decision makers to create the dedicated infrastructure needed for active mobility during pandemic crisis as mentioned above by providing safe room for pedestrians and cyclists. “Emergency cycle lanes” make essential travel possible and safe. “Tactical urbanism” interventions such as traffic cones, plastic bollards, construction separators help to reclaim street space from car parking and travel lanes and give this space to cycling and walking.

Narrowing roads can also help traffic calming, slowing down drivers. This should be coupled with increased efforts to ensure that pedestrians and cyclists are treated as equal road users with street and public space divided equally between all users. Furthermore, cycling and walking infrastructure should be integral to urban planning policies and building regulations (including secure bicycle parking,

\(^{85}\) [https://www.bike-eu.com/market/nieuws/2020/05/german-e-bike-sales-increase-rapidly-after-shop-re-openings](https://www.bike-eu.com/market/nieuws/2020/05/german-e-bike-sales-increase-rapidly-after-shop-re-openings)
chargers, wide entrance doors and appropriately designed lifts). Active mobility infrastructure also needs to be better integrated with public transport solutions as most public transport trips include at least two legs covered on foot.

Active mobility also needs to be supported by appropriate economic and fiscal measures to incentivise sustainable mobility choices, for example, implementing parking management schemes, or subsidize zero emissions vehicles and bike-sharing schemes. During the pandemic some authorities even made bike sharing systems free for use by health sector professionals and other essential workers. For the long term, it will be essential to provide those people that were using these services during the pandemic incentives for purchasing bikes, e-bikes or cargo bikes coupled with possible congestion charging or other mobility management schemes as identified under Theme 4.

The UK announced a £2 billion package putting cycling and walking at the heart of Britain’s post-COVID transportation plan. With the help of this money\(^6\) new infrastructure for walking and cycling will be built and “fix your bike voucher scheme” where citizens can apply for a voucher of £50 to repair their bike will be introduced.

In addition to economic and financial incentives, behaviour can be changed to increase the use of active mobility through Education and communication. Education, awareness-raising, mass-media and community-wide campaigns related to benefits of safe walking and cycling can play a significant role in encouraging people to shift to active mobility. However, education alone is not enough to influence or change attitudes. Incentives and innovative approaches that make it fun, such as cycling lessons or the use of games and apps, are needed to create change as identified in Theme 4 above.

In these awareness-raising initiatives, it is also important to target specific user groups such as speeding offenders, school children, the elderly or new residents moving into a city. Furthermore, parents can influence and shape their children’s travel behaviour - the more parents travel by bicycle or by foot, the higher the probability of their children going by bicycle or walking. In communicating initiatives it is also important to ensure community buy-in and involvement in the development of active mobility schemes as only with the involvement of the potential users will optimal solutions be found.

In order to achieve modal shift towards active mobility, it is crucial to provide adequate funding for investments. The allocation of sufficient budgetary resources to address all the points mentioned above should be an integral part of the national development plans. During the pandemic crisis, some local, regional and national governments have actively supported this with new/additional funds for investments in infrastructure or encouraging use.

Providing enough funds for improving cycling and walking infrastructure will guarantee a high rate of return on investment. Applying policy tools like HEAT and ForFITS\(^7\) can help urban planners, transport authorities and health practitioners to estimate the value of the reduced mortality resulting from regular walking or cycling or the CO2 impact of increased active mobility. They can make the case for new investment in active mobility and quantify its economic value.

Outcomes and conclusions
As a cornerstone of effective transport and urban planning, active mobility can make a large contribution to resilient city with healthy and happy citizens. It can also help to create vibrant public spaces where people can meet and local economy can thrive. For a more resilient future with more

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\(^7\) [https://unece.org/forfits-model-assessing-future-co2-emissions](https://unece.org/forfits-model-assessing-future-co2-emissions)
people having the possibility to cycle and walk safely, it is not about implementing single measures, but about deploying all of them and still others to radically restructure urban space.

To ensure this, it is fundamental that there is a focus on:

- building consensus and facilitating coordination between the various regional, national and local authorities;
- ensuring that there is a robust regulatory framework on which to build active mobility solutions; seamless integration with other modes of transport, in particular public transport solutions;
- building and adapting infrastructure to promote active mobility;
- incentivising users economically and fiscally to switch modes; communicating and raising awareness of the benefits of greater active mobility use;
- Leveraging data solutions to develop increased use;
- Taking steps to ensure that solutions adopted are equal for all with particular focus on vulnerable users and gender differences; and
- Supporting the implementation of all these solutions with appropriate funding.
2.7: Theme 7

“Rebuilding the transport system in a fair and inclusive way while avoiding social disparities and particularly considering the needs of vulnerable and disadvantaged groups in society. Take into account the social dimension of pandemics as well as the need for a just transition towards a green and healthy transport system”

Introduction

Addressing inequality of access has been at the heart of the work of THE PEP for many years. Inequalities and social disparities are not caused by transport systems, but lack of mobility options can accentuate them, therefore wider planning policies need to ensure that they also identify transport solutions to these problems. As part of this, it is important that local and national authorities focus on the rebuilding of the transport system, particularly public transport in this framework. In so doing, they should make transport solutions fair and inclusive in terms of availability, affordability, time budget, adequacy, and accessibility.88

The positive and negative consequences of responses to the COVID-19 pandemic have been widely discussed in relation to transport. However, the social disparities related to COVID-19 and mobility have been less documented. In this regard, “building forward” the transport system could be sustainable but may exacerbate social disparities if it does not take into consideration the needs of vulnerable and disadvantaged groups. The COVID-19 pandemic has also highlighted that individuals who are considered vulnerable or disadvantaged are subject to change, so policy makers need to be able to adapt their approaches to account for this.

Public authorities need to plan and develop transport policies and infrastructure by paying particular attention to (i) individuals who are part of vulnerable groups (e.g. elderly, children) and (ii) disadvantaged individuals and in line with the policies identified in previous themes.

Workers and employment opportunities must be taken into consideration in this rebuilding, for example in terms of skills transfer and development, and countries should make sure to abide by the positive and negative obligations of fundamental labour rights.

Furthermore, the current efforts aimed at the reclamation of road spaces and public walkways for active mobility and local businesses mentioned in previous themes need to ensure that they do not negatively affect persons with reduced mobility.

The issue at hand

Research has well documented that poor transport systems have negative effects on mobility.89 However, poor transport systems affect individuals and groups differently. For example, individuals


may be disadvantaged by public transport systems which do not provide sufficient access to important destinations, including employment opportunities, everyday services, and social exchanges to allow an individual to fully participate in society. The lack of adequate transport services has a disproportionate effect on individuals living in certain areas, notably rural areas, but also densely populated urban areas for example. In more deprived parts of urban areas, individuals may have limited or no access to safe, clean and reliable public transport, as well as to safe environments for active mobility. These areas may also have high levels of air and noise pollution as a result of road congestion, as well as greater risk of injury on road networks, which further exacerbates social disparities related to mobility. Moreover, vulnerable and disadvantaged groups are more exposed to inequalities, such as the elderly, youth and persons with reduced mobility as well as those living in informal settlements.

As these few examples have demonstrated, current transport systems could be considered unfair and non-inclusive systems which perpetuate social disparities in many ways. These negative consequences come together and have been identified as ‘transport poverty’ which combines transport affordability (the cost of transport being too high), mobility poverty (the lack of transport availability – usually motorised transport), accessibility poverty (the lack of transport solutions to reach employment, essential services and leisure) and exposure to transport externalities (bearing an undue burden from such things as pollution and congestion).

This has been further highlighted and widened by the COVID-19 pandemic, which has emphasised and, in many cases, widened social disparities in society and has had a disproportionate effect on the mobility of members of vulnerable and disadvantaged groups. For example, lockdowns implemented by countries drastically changed individuals’ patterns of movement, and those individuals who do not have the ability to work from home and those who have less secure labour conditions have been more exposed to the virus. Generally, they are women, migrants and/or racial and ethnic minorities who are disproportionately represented in essential work settings such as healthcare facilities, factories, client facing roles and public transportation. In such settings, they may be in close contact with the public or other workers during their working hours. Moreover, many of these individuals have to use public transport to get to their place of work, and may not have a private car. Therefore, it is important that service levels of public transport are maintained, or at least provided at an adequate level in order not to fail those who need it most.

Socioeconomic sustainability requires such a transition to sustainable modes of transport to be just, so as to ensure that workers and vulnerable and disadvantaged groups are not left behind. Even in the global north, there are great inequalities. Two thirds of the households in the poorer parts of Berlin do not have access to a car. Nor do 50% of the households across Brussels.

Rebuilding the transport system in a way that encompasses all elements of sustainability, but that also takes into consideration the need for a just transition and is also fair and inclusive is indeed a challenge. However, the rebuilding recovery after the COVID-19 pandemic offers an opportunity to


move towards cleaner and healthier transport systems which are more sensitive to the needs of vulnerable (e.g. elderly) and disadvantaged groups.

**Examples of where the issue has been addressed in a positive manner**

A project for the first Bus Rapid Transport line was recently introduced in Almaty, Kazakhstan. The advantages listed included: saved surrounding space; minimum station-to-sidewalk distance; accessibility for people with reduced mobility; and passengers can board or alight at stops quickly with the height of the platform allowing for unhindered access to low-floor public transport vehicles for people with reduced mobility.92

In response to the pandemic, the Irish Government is implementing a €250m jobs stimulus package. This stimulus package includes €40m for pedestrian infrastructure, €42m to support urban and rural cyclists, €21m towards improving rail journeys, €10m for the adaptation of the road network to protect it in respect of climate change (including repairs to damaged roads as a result of severe weather events), €2m for new and expanded local bus services, €0.25m to support the transition of local link services to zero-emission vehicles in areas of rural Ireland.93

In Switzerland a pilot carpooling app project was introduced for rural areas. This project addressed the problem of public transport in rural areas being under even greater pressure as a result of COVID-19. It also sought to provide cost-effective services by trialling carpooling services to help increase the number of people sharing privately owned vehicles, thus reducing the overall traffic volume.94

The Sustainable Urban Mobility Plan (SUMP) for Lyon (2017-2030) had as one of its main pillars to promote independent mobility. It included 122 actions along eight strategic themes. One of these themes is promoting access to mobility for all. All metro stations in Lyon, except one, are now accessible, with sound-system lifts and embossed buttons and braille. Seventy percent of bus stops are equipped for people with reduced mobility.95 Similarly, the SUMP for Madrid, approved in 2014, puts a strong emphasis on the peripheral districts of the city. Among its main aims is more inclusive mobility, which takes into account the needs of all citizens, in terms of gender and accessibility.

**Outcomes and conclusions**

Whilst keeping in mind the overall long term goal of securing SDGs 11.2; 11.3; 11.7 and 11.a,96 when considering how to make transport more fair and inclusive it is important to consider that whilst transport systems should seek to address social disparities in mobility, social disparities are affected...

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96 Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons; Target 11.3: By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries; Target 11.7: By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities; Target 11.a: Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning. https://sdgs.un.org/goals/goal11, accessed 26 October 2020.
by a multitude of socioeconomic factors, so rebuilding transport systems may not be sufficient to address these issues.

Governance issues related to rebuilding transport in a fair and inclusive way are fundamental to ensuring no one is left behind. This will entail deciding on who will be responsible for addressing social disparities in transport systems, such as which departments at national and local level may be best suited for this task. Civil society can play an important role, though countries should not seek to leave these issues solely to civil society.

Furthermore, transport investments and innovation focused on digitalisation, supported by appropriate training and simple user interfaces can help disadvantaged populations to access mobility services to increase their opportunities.

Finally, lack of data on social disparities in transport mobility and also the lack of capacity for data collection of this kind need to be overcome to assist policy makers in identifying these inequalities.
Chapter 3: Key recommendations

Reflecting the analysis of the current situation and in addressing concerns raised during COVID-19 and the post-pandemic situation, the following recommendations have been developed, while considering the underlying framework of “Avoid, Shift, Improve”. These recommendations are framed to focus firmly on the needs of the users for whom transport and mobility systems are designed and built to ensure the accessibility to the main population centres as well as suburban and rural areas. The recommendations have been developed within the context of the objectives of THE PEP97, the Vienna Declaration of the Fifth High-Level Meeting of the Ministers of Transport, Health and Environment, the Paris Climate Agreement, and the SDGs.

Recommendation 1: Implementing sustainable urban and transport planning solutions (“Avoid”):

Introduce modern principles and tools of spatial and urban planning in urban, suburban and rural environment, ensuring accessibility to other people, goods and services and the main points of interest while minimizing transport demand generation and optimizing investments in infrastructure and services, including through:

1. ensuring an optimal density in urban development and promoting mixed-use urban areas and buildings combined with appropriate green and healthy transport capacity by integrating spatial and transport planning;
2. implementing urban planning initiatives to improve people’s quality of life by providing, safe access to goods and services and to “green” and “blue” areas within the “15 minute” neighbourhood applying the principles of a short distance city;
3. ensuring that spatial and urban planning guidelines and policies primarily focus on the accessibility needs of the entire population including vulnerable users, in particular children and youth as well as the elderly and persons with reduced mobility;
4. ensuring the assessment of the impacts of major construction projects on transport and mobility as well as the economy, environment and health;
5. introducing new urban assessment methodologies that map access to “green”, “blue” and quiet places, data on GDP and public health in order to inform future planning decisions;
6. Orienting urban development towards high-capacity green, safe, healthy and quality public transport systems;
7. creating “green” corridors that combine the advantages of environmental corridors with opportunities for active mobility;
8. Developing engagement and communication programmes to involve people, engage users and generate public support, particularly during the planning phase, to help ensure public buy-in for the solutions proposed; and
9. implementing the recommendations of the UNECE and THE PEP Handbook on Sustainable Urban Mobility and Spatial Planning98 in line with the goal of THE PEP to integrate transport, health and environmental objectives into urban and spatial planning policies.

97 THE PEP From Paris 2014 to Vienna 2019: https://thepep.unece.org/node/87
98 A Handbook on Sustainable Urban Mobility and Spatial Planning: https://thepep.unece.org/node/815
Recommendation 2: Putting effective, high-quality and safe public transport at the centre of mobility (“Shift” and “Improve”)

1. The development of public transport should be a priority. The provision and use of high quality and attractive public transport services, should be an integral part of wider planning for recovery, resilience and sustainable urban mobility in line with the goal of THE PEP to integrate transport, health and environmental objectives into urban and spatial planning policies.

2. Plan public transport services around passenger needs and expectations to ensure a system that is attractive to users and integrates services, ticketing and modes to provide a reliable, affordable, easily accessible, safe and comprehensive door-to-door network. At the same time ensure these services provide an environmentally friendly solution to mass mobility such as through the use of electric public transport fleets and the provision of appropriate, dedicated public transport infrastructure.

3. Support public transport services with public information campaigns that reverse the current negative language and highlight the benefits of public transport to its users and society (with a particular focus on the positive safety elements of public transport in the current and post-COVID-19 era) to entice passengers back to the service. A fundamental part of this support should be easy access to timely, personalised journey information and integrated ticketing.

4. Ensure that providers of public transport services can rely on the assurance of multi-annual funding arrangements, notably in the context of COVID-19 recovery plans.

5. Enable public authorities to explore new sources of funding for public transport such as green bonds, public-private partnerships, land development levies and revenue from incentives introduced to encourage modal shift, etc. Further, funding decisions should be based on the full range of full cost-benefit and impact assessments that also consider land value capture.

Recommendation 3: Capitalising on micro-mobility (“Shift” and “Improve”)

1. Establish legal certainty with regard to micro-mobility for service providers and users, with effective enforcement of safety standards (building on, for example, the international standards developed by the industry for pedal-assist electric bicycles) and clarity with regard the use of micro-mobility vehicles. Make this information known through widespread public information campaigns.

2. Carry out comprehensive assessments of the large-scale implementation of electric micro-mobility solutions to better understand the impacts on:
   a. Pollutant emissions and material use (both in terms of end-use emissions, for which tools such as urban transport roadmaps can be used, and in terms of emissions and material use in the life cycle of the solutions).
   b. Health (e.g. in terms of physical (in-)activity and safety of users).
   c. Modal shift with a focus on the means of transport replaced by micro-mobility vehicles
   d. Congestion of street and road networks (e.g. in terms of modal shift and traffic generation effects).

3. Promote micro-mobility including related sharing solutions in particular for the first and last mile e.g. through infrastructure investments, cooperation schemes between local authorities and mobility providers or through financial incentives, based on robust data on the health and
environmental benefits of this type of mobility and considering the safety implications for other users. This needs to be supported by better infrastructure (both digital and technical) to encourage sharing solutions, such as bicycle and electric scooter sharing systems, and pre-empt issues that might emerge in relation to charging and parking.

4. Collect, manage and make best use of data collected in order to:
   a. Identify gaps in the transportation network
   b. Monitor equitable service standards
   c. Offer multi-modal real-time transport information
   d. Evaluate respective policies

5. When establishing, expanding and promoting micro-mobility solutions, take into account social inclusion and equity such as low-income affordability or digital impoverishment as well as the needs of disadvantaged groups.

**Recommendation 4: Introduce effective mobility management ("Shift")**

1. Prepare national mobility management strategies, to be developed in coordination with other member States under THE PEP. These strategies should provide guidance and support aimed at offering sustainable mobility choices and options at national, sub-national and local level, involve also the private sector and cover both passenger and freight initiatives. These strategies should focus on the following key elements:
   a. Strengthening the efficient and smart management of mobility needs and transport demand to ensure inclusive access to mobility and efficient use of multifunctional infrastructure and of transport systems.
   b. Implement measures to make public transport and active mobility the preferred option particularly in cities, including by implementing effective parking policies and other fiscal, regulatory and physical measures incentivising people to switch away from the use of private cars.
   c. Making the best possible use of the potential of new transport technologies and zero-emission vehicles by combining them with climate-friendly mobility services and logistics in particular to ensure the quality and safety of public transport services.
   d. Embedding digitization and mobility, smartly and cost-efficiently, as service approaches, and incorporating automated vehicles into the mobility system, while ensuring transparent data-sharing practices, the incorporation of the user’s perspective and adaptation to the situation post-COVID-19.
   e. Identification of targeted incentives and development of support programmes aimed at multimodal, clean, safe and inclusive mobility management and planning for cities, regions, companies, tourism, schools and youth by placing the needs of the user at the centre of potential solutions.
   f. Supporting awareness-raising, sustainable mobility planning and land-use policies to counteract urban sprawl, and providing incentives for modal shift and environment- and climate-friendly connectivity and accessibility in cities and regions.

2. Building on the national strategies, facilitate the development of sustainable regional and urban plans for mobility management and mobility planning including through the introduction of
Sustainable Urban Mobility Plans (SUMPs) or similar planning tools and by exchanging good practice in this area and identifying common frameworks, based on which individual authorities can customize their systems.

3. Promote the development of urban logistics hubs outside the city centres in combination with the implementation of CO2 neutral delivery and city logistics.

Recommendation 5: Innovate to make transport green and healthy ("Improve")

Innovation is the key means by which current modes of travel can be improved to create more sustainable transport networks, services and mobility options. Promote more secure, safer and greener travel, increasing active travel, more integrated networks and reducing harmful emissions through technological advances in engineering, and the digital enhancement of transport services and efficient infrastructure by:

1. Further developing the digitalization of society and transport through the expansion of integrated mobility-as-a-service platforms, combining modes of transport with potential consumer, state and business interests.

2. Replacing internal combustion engine vehicles with zero-emission ones, supported by the investment in the necessary infrastructure, encourage active mobility and maximise the positive health effects of emission reduction as well as of physical activity.

3. Implementing "Vision Zero" by improving road safety taking into account the possibilities created by digitalisation such as the communication between vehicles and between vehicles and their environment to ensure appropriate driving and compliance with speed limits to significantly reduce road crash injuries and deaths.

4. Support the evolution of monitoring and enforcement systems. Improved digitisation of networks and travel patterns generates anonymized data, while protecting privacy and greater knowledge to provide more responsive, efficient, and adaptable management of public and private modes of transport.

5. Ensure the adoption of flexible, responsive, integrated, affordable and fair pricing, ticketing and revenue management systems that facilitate equity in access to transport.

Recommendation 6: Encourage active mobility ("Shift")

During the pandemic crisis, the role of cycling and walking became even more important as they emerged as viable mobility options for essential trips while supporting physical distancing and relieving the burden on public transport. In order to support safe cycling and walking as means of making cities more liveable and resilient the countries of the pan-European region are encouraged to act according to the following principles:

1. Build strong and long-term political consensus including investment strategies and fiscal measures to promote active mobility, and ensure coordination and cooperation across all levels of government and other key stakeholders;

2. Accelerate the implementation of the Pan-European Master Plan for Cycling Promotion (Annex III of the Vienna Declaration) and develop and implement an equivalent plan for walking;
3. Address the following three pillars to promote active mobility:
   a. Improve infrastructure, for example, adapt street design and amend traffic regulations and ensure adequate financing to facilitate the creation of safe infrastructure and spaces for cyclists and pedestrians while ensuring attractive multimodal solutions with public transport.
   b. Raise awareness and skills, for example, by communicating the benefits of cycling and walking and encourage children’s training in safe walking and cycling, including by developing appropriate manuals.
   c. Improve governance and accountability, for example, ensure clear attribution of responsibility, resources and accountability for walking and cycling to specific authorities at the national and/or local levels and create “knowledge hubs” to facilitate the exchange of good practices among all relevant stakeholders.

4. Link decisions on infrastructure development in emergency conditions with long-term goals formulated in relevant strategic documents (national transport, cycling, active mobility and health plans) and integrate cycling and walking into emergency, recovery and resilience plans when they deal with transportation measures.

5. Change urban planning, land-use and transportation policies, building on the principles of fair allocation of public space and ensuring that people and essential services and goods are accessible, safely and healthily by walking and cycling.

Recommendation 7: Leave no one behind (“Improve”)

1. Whilst keeping in mind the overall long-term goal of securing SDG targets 11.2; 11.3; 11.7 and 11.a, the following measures should be taken into consideration when rebuilding the transport system in a fair and inclusive way:
   a. Collect: data to assess the level of transport inequalities and reduce transport poverty.
   b. Plan:
      o Transport networks to avoid creating disadvantaged neighbourhoods and transport-isolated areas.
      o New developments by keeping in mind accessibility and public transport.
      o New developments and transport infrastructures so that various actors, especially grassroots and community initiatives, are involved, in order to understand and address social disparities in communities affected by poor transport services.
      o Public transport with vulnerable groups in mind.
   c. Focus on:
      o Future transport investments in multifunctional infrastructure for sustainable development, paying particular attention to developments in deprived areas and areas with low levels of transit accessibility.
      o Implementation of urban planning initiatives aimed at improving the quality of life of people (social, economically, environmentally, medically and through transport) by providing efficient access to essential services and goods.
      o Making public transport, transport infrastructure and related services more accessible with vulnerable groups in mind, for instance by implementing guiding systems for blind people, barrier-free stations or by adapting trains and buses for people with reduced mobility.
Chapter 4: Next steps

After having developed and agreed on the recommendations on green and healthy sustainable transport, and after having them adopted as part of the Vienna Declaration, it will be necessary to assist member States in their implementation with a focus on ensuring that they can “build forward better” their transport and mobility systems for a more resilient future.

To solve this problem, the following mechanisms can be proposed:

a) Establishment of a Partnership (potentially known as “The Partnership on Building Forward Better”) to assist countries in implementing the Recommendations. The main objectives of this Partnership could be:
   • assessment and forecasting of the development of the situation with changes in transport demand and transport behaviour in the “new normal” for various countries of the ECE Region;
   • analysis of best practices in improving transport systems’ sustainability and resilience in post-pandemic economic development and the likelihood of new global threats;
   • development of proposals and methodological documents to improve transport systems’ sustainability, including taking into account the implementation of the latest developments in science and technology, covering also issues of improving the epidemiological safety of transport.

b) Further development of initiatives in the field of THE PEP "Relay Race" - holding international conferences, seminars, round tables on topics related to the activities in the frameworks of the Partnership mentioned in point (a).

c) Increasing the promotion of and use of THE PEP Clearing House as an instrument to ensure information support for the implementation of the Recommendations in the countries of the Region and in support to the activities identified in point (a).

d) Further development and support within the framework of THE PEP of initiatives of universities and scientific organizations to create and implement training programs for specialists aimed at ensuring transport systems’ sustainability and resilience in the new economic and social development conditions (through "THE PEP Academy"). Giving such programs an international character, providing for the unification of training programs, exchange of students and teachers, issuance of international diplomas, etc.

e) Expansion of publishing activities of THE PEP through such things as the publication of THE PEP online journal, publication of important scientific articles and reports on Partnership issues, relevant materials of conferences, seminars, symposiums, etc. This would also include the publication of methodological documents developed within the framework of the Partnership mentioned in point (a).

In relation to the creation of a Partnership, it is envisaged that it would be set up to function in a manner similar to existing partnerships and with a clear mandate and terms of reference focused on helping in the implementation of the recommendations with a view to the implementation of the Sustainable Development Agenda. The partnership would report to THE PEP Steering Committee as all other partnerships at its annual session. THE PEP secretariat would provide secretariat services to the partnership. This Partnership would not duplicate the activities of existing partnerships or the activities of the Steering Committee but would fill a void that exists between the very technical initiatives that are currently undertaken in the existing partnerships and the high-level policy directions provided by the Steering Committee. As an example, the Partnership on Building Forward
Better would take the recommendations from the Cycling and Eco-Driving Partnerships and include them in the development of proposals, along with other transport system sustainability points (as identified in bullet 3 of point (a) above) that are of relevance to the implementation plans of individual member States.

Building on this, the Partnership would, through collaborative and peer learning, initiate the preparation of national action plans, led by member States, for the implementation of the recommendations with the possible support of external resources funded by specific donations. These action plans would use the recommendations as a framework for targeted policy initiatives that are relevant to each country’s particular circumstances with indicative timescales for the implementation of the action plans and agreed targets on sustainable mobility. Member States would, on a voluntary basis, request for action plans to be developed.

In a process similar to the UNECE Environmental Performance Reviews a mechanism, supporting countries to assess the implementation of their action plans, could be set up to review the implementation of the action plans after 5 and 10 years with the possibility to review the plans at those steps to account for changes in the transport or wider economic environment.

THE PEP Steering Committee would initiate the creation of the “Partnership on Building Forward Better” at the May 2021 High Level Meeting.
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